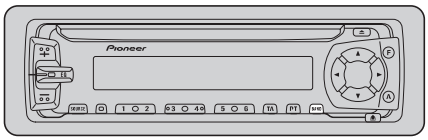
Service Manual

DEH-2000R/X1N/EW



ORDER NO.
CRT2312

HIGH POWER CD PLAYER WITH RDS TUNER

DEH-2000R X1N/EW
DEH-2030R X1N/EW
DEH-2020R X1N/GR

COMPACT disc DIGITAL AUDIO

- **See the separate manual CX-916(CRT2300) for the CD mechanism description, disassembly and circuit description.**
- **The CD mechanism employed in this model is one of S8 series.**

CONTENTS

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS SERVICE INC. P.O.Box 1760, Long Beach, CA 90801-1760 U.S.A.
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE.LTD. 253 Alexandra Road, #04-01, Singapore 159936

K-ZZD. DEC. 1998 Printed in Japan

● **CD Player Service Precautions**

1. For pickup unit(CXX1285) handling, please refer to"Disassembly"(CX-916 Service Manual CRT2300). During replacement, handling precautions shall be taken to prevent an electrostatic discharge(protection by a short pin).
2. During disassembly, be sure to turn the power off since an internal IC might be destroyed when a connector is plugged or unplugged.
3. Please checking the grating after changing the service pickup unit(see page 58).

1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer.
Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty.
If you are not qualified to perform the repair of this product properly and safely; you should not risk trying to do so and refer the repair to a qualified service technician.

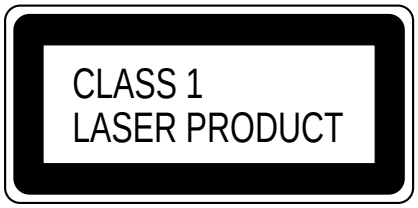
1. Safety Precautions for those who Service this Unit.

- **When checking or adjusting the emitting power of the laser diode exercise caution in order to get safe, reliable results.**

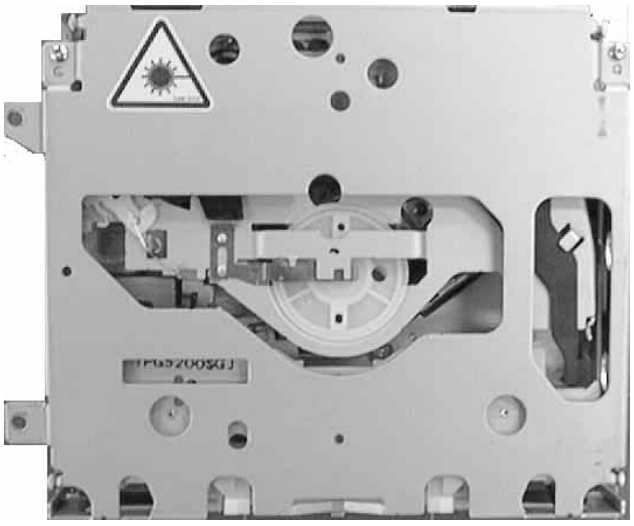
Caution:

1. During repair or tests, minimum distance of 13cm from the focus lens must be kept.
2. During repair or tests, do not view laser beam for 10 seconds or longer.

2. A "CLASS 1 LASER PRODUCT" label is affixed to the bottom of the player.



3. The triangular label is attached to the mechanism unit frame.



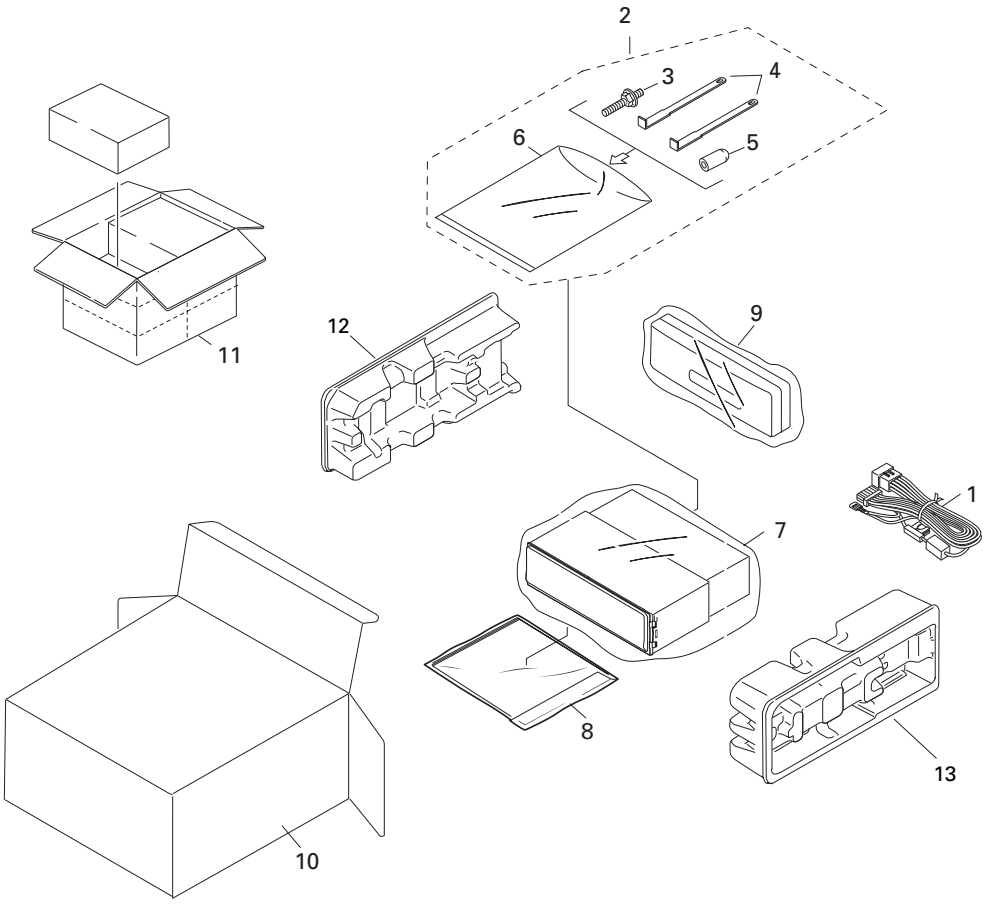
4. Specifications of Laser Diode

Specifications of laser radiation fields to which human access is possible during service.
Wavelength = 800 nanometers

2. EXPLODED VIEWS AND PARTS LIST

2.1 PACKING

● **DEH-2000R/X1N/EW**



NOTE:

● Parts marked by "*" and ⊗ can not be supplied.

● Screws adjacent to ∇ mark on the product are used for disassembly.

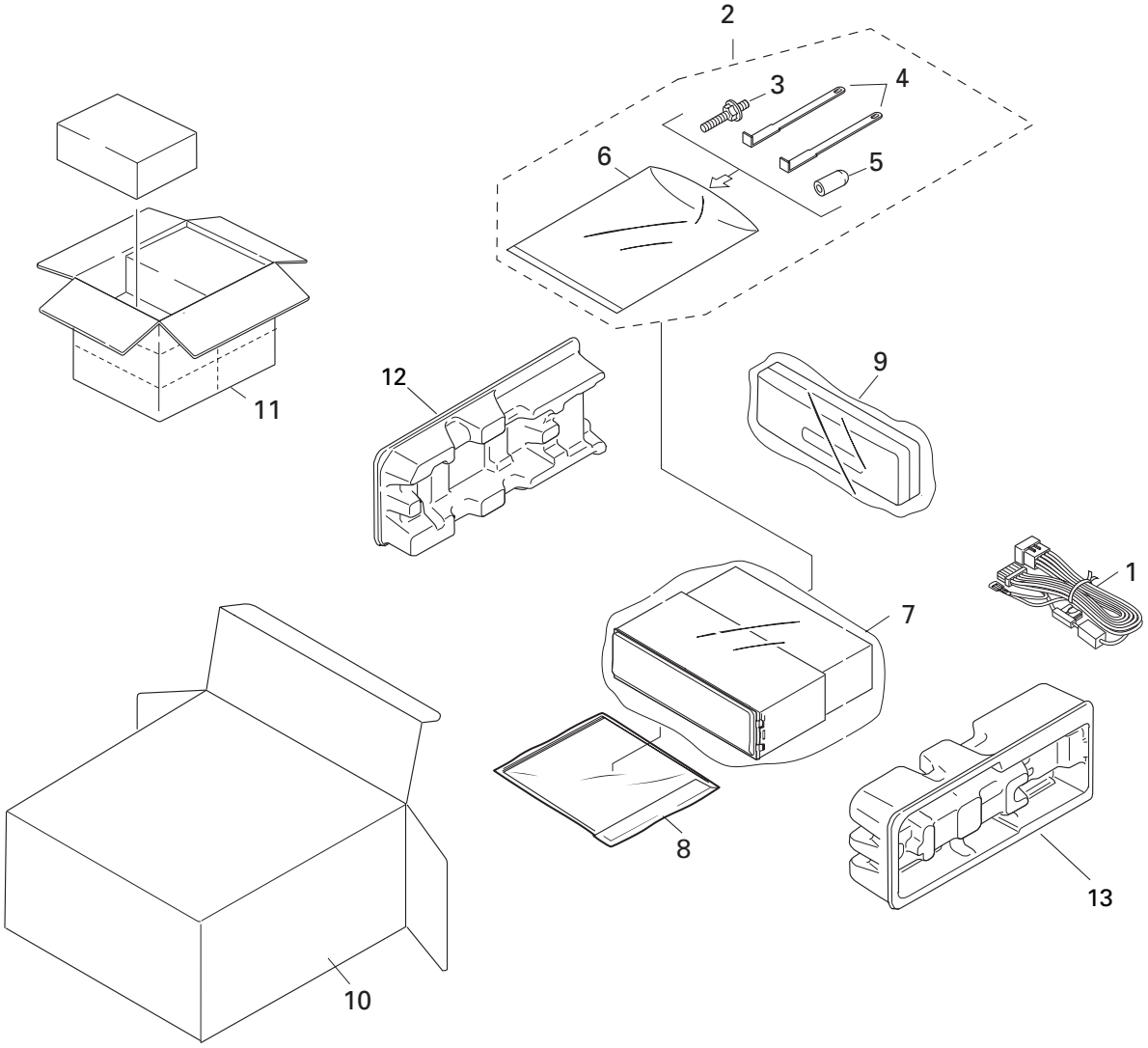
● **PACKING SECTION PARTS LIST**

Mark	No.	Description	Part No.
	1	Cord Assy	CDE5754
*	2	Accessory Assy	CEA2397
	3	Screw	CBA1002
	4	Handle	CNC5395
	5	Bush	CNV3930
*	6	Polyethylene Bag	E36-615
	7	Polyethylene Bag	CEG-162
	8-1	Owner's Manual	CRD2841
	8-2	Owner's Manual	CRD2842
	8-3	Owner's Manual	CRD2843
	8-4	Installation Manual	CRD2844
*	8-5	Passport	CRY1013
*	8-6	Warranty Card	CRY1087
	8-7	Polyethylene Bag	CEG1116
	9	Case Assy	CXB3520
	10	Carton	CHG3652
	11	Contain Box	CHL3652
	12	Protector	CHP2101
	13	Protector	CHP2102

● **Owner's Manual, Installation Manual**

Model	Part No.	Language
DEH-2000R/X1N/EW	CRD2841	English, Spanish
	CRD2842	German, French
	CRD2843	Italian, Dutch
	CRD2844	English, Spanish, German, French, Italian, Dutch

● **DEH-2030R/X1N/EW**



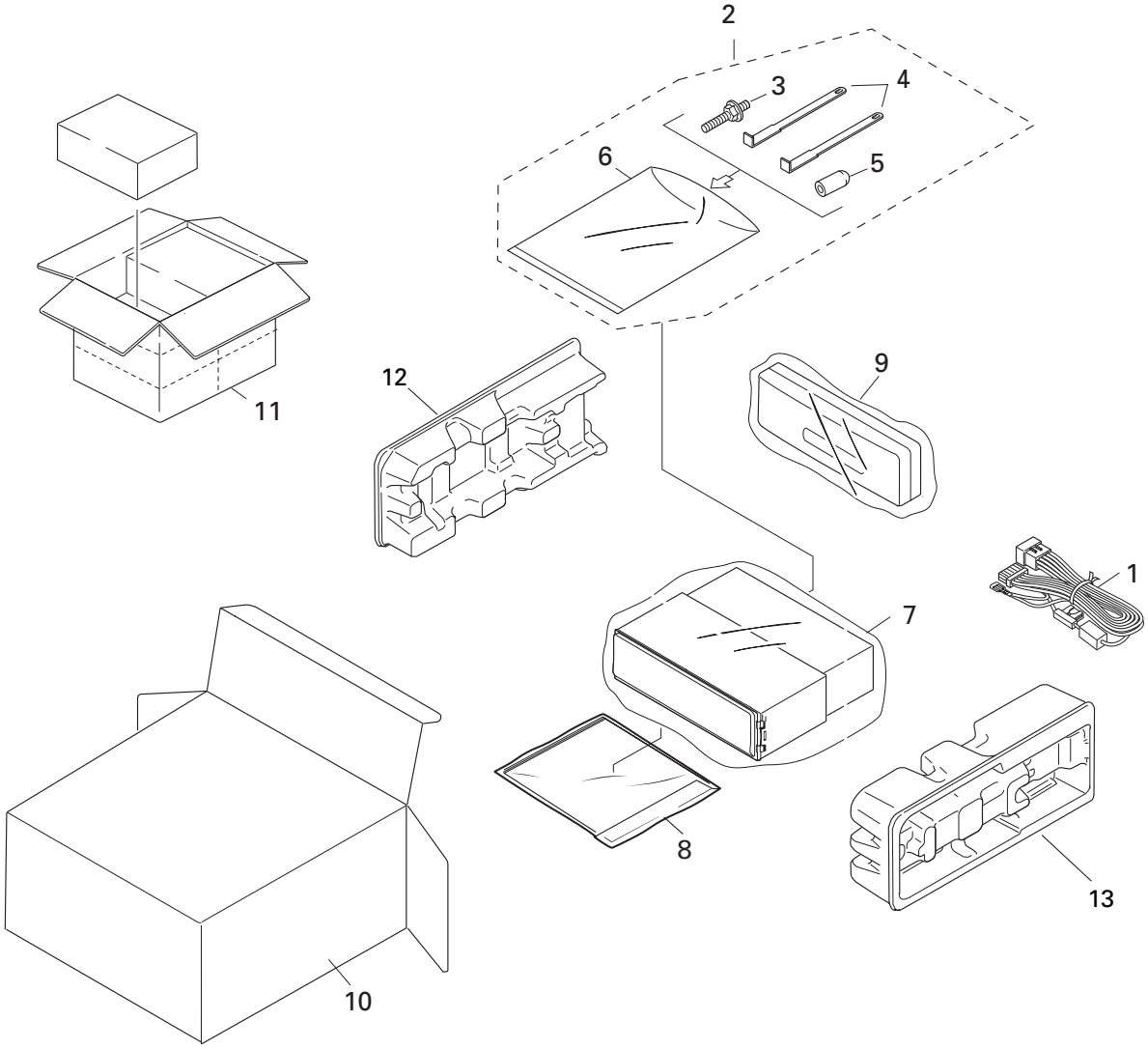
● **PACKING SECTION PARTS LIST**

Mark	No.	Description	Part No.
	1	Cord Assy	CDE5754
*	2	Accessory Assy	CEA2397
	3	Screw	CBA1002
	4	Handle	CNC5395
	5	Bush	CNV3930
*	6	Polyethylene Bag	E36-615
	7	Polyethylene Bag	CEG-162
	8-1	Owner's Manual	CRD2841
	8-2	Owner's Manual	CRD2842
	8-3	Owner's Manual	CRD2843
	8-4	Installation Manual	CRD2844
*	8-5	Passport	CRY1013
*	8-6	Warranty Card	CRY1087
	8-7	Polyethylene Bag	CEG1116
	9	Case Assy	CXB3520
	10	Carton	CHG3653
	11	Contain Box	CHL3653
	12	Protector	CHP2101
	13	Protector	CHP2102

● **Owner's Manual, Installation Manual**

Model	Part No.	Language
DEH-2030R/X1N/EW	CRD2841	English, Spanish
	CRD2842	German, French
	CRD2843	Italian, Dutch
	CRD2844	English, Spanish, German, French, Italian, Dutch

● **DEH-2020R/X1N/GR**



● **PACKING SECTION PARTS LIST**

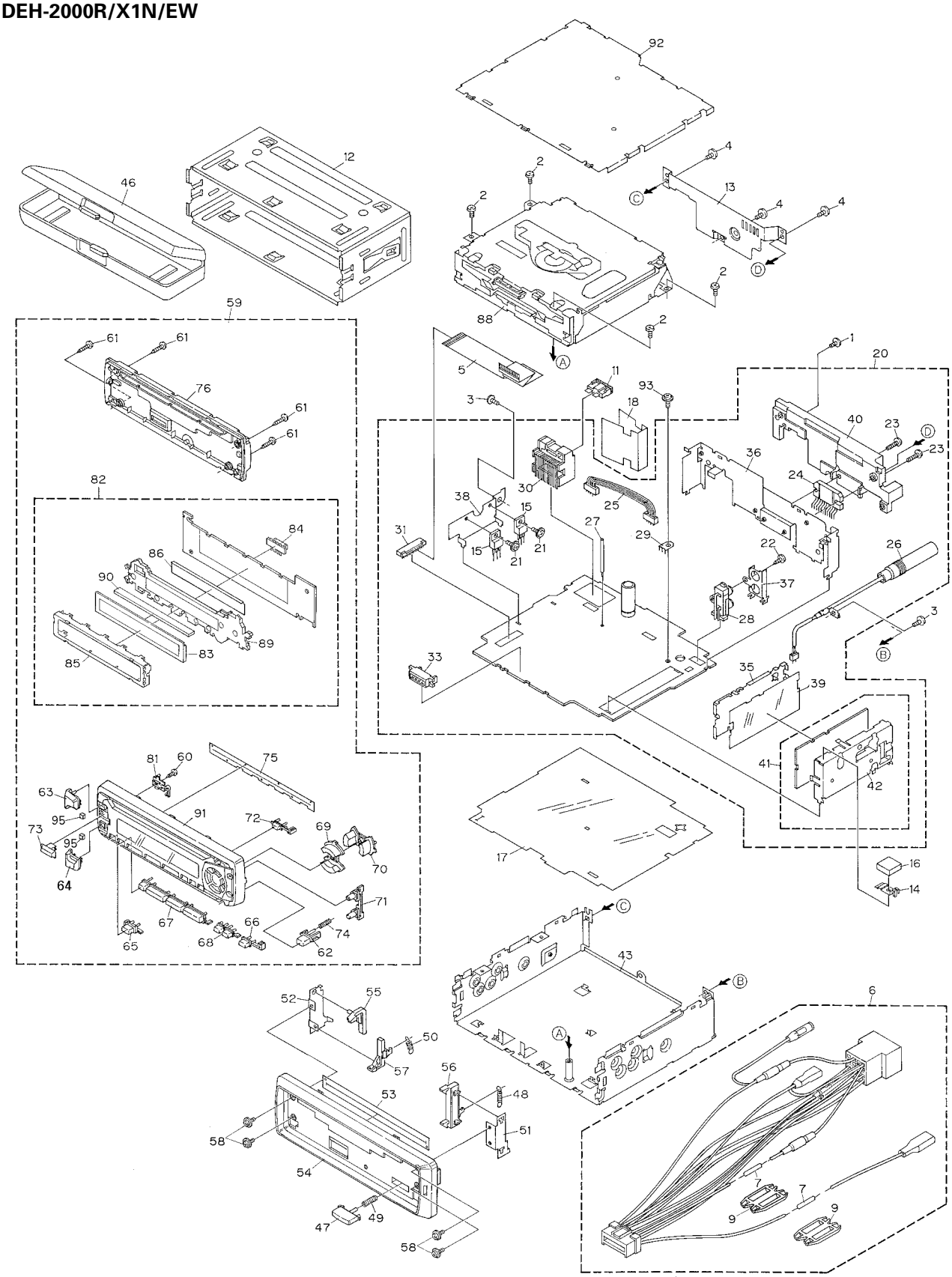
Mark	No.	Description	Part No.
	1	Cord Assy	CDE5754
*	2	Accessory Assy	CEA2397
	3	Screw	CBA1002
	4	Handle	CNC5395
	5	Bush	CNV3930
*	6	Polyethylene Bag	E36-615
	7	Polyethylene Bag	CEG-162
	8-1	Owner's Manual	CRB1525
	8-2	Installation Manual	CRB1526
*	8-3	Passport	CRY1013
*	8-4	Warranty Card	CRY1087
	8-5	Polyethylene Bag	CEG1116
	9	Case Assy	CXB3520
	10	Carton	CHG3654
	11	Contain Box	CHL3654
	12	Protector	CHP2101
	13	Protector	CHP2102

● **Owner's Manual, Installation Manual**

Model	Part No.	Language
DEH-2020R/X1N/GR	CRB1525	German
	CRB1526	German

2.2 EXTERIOR

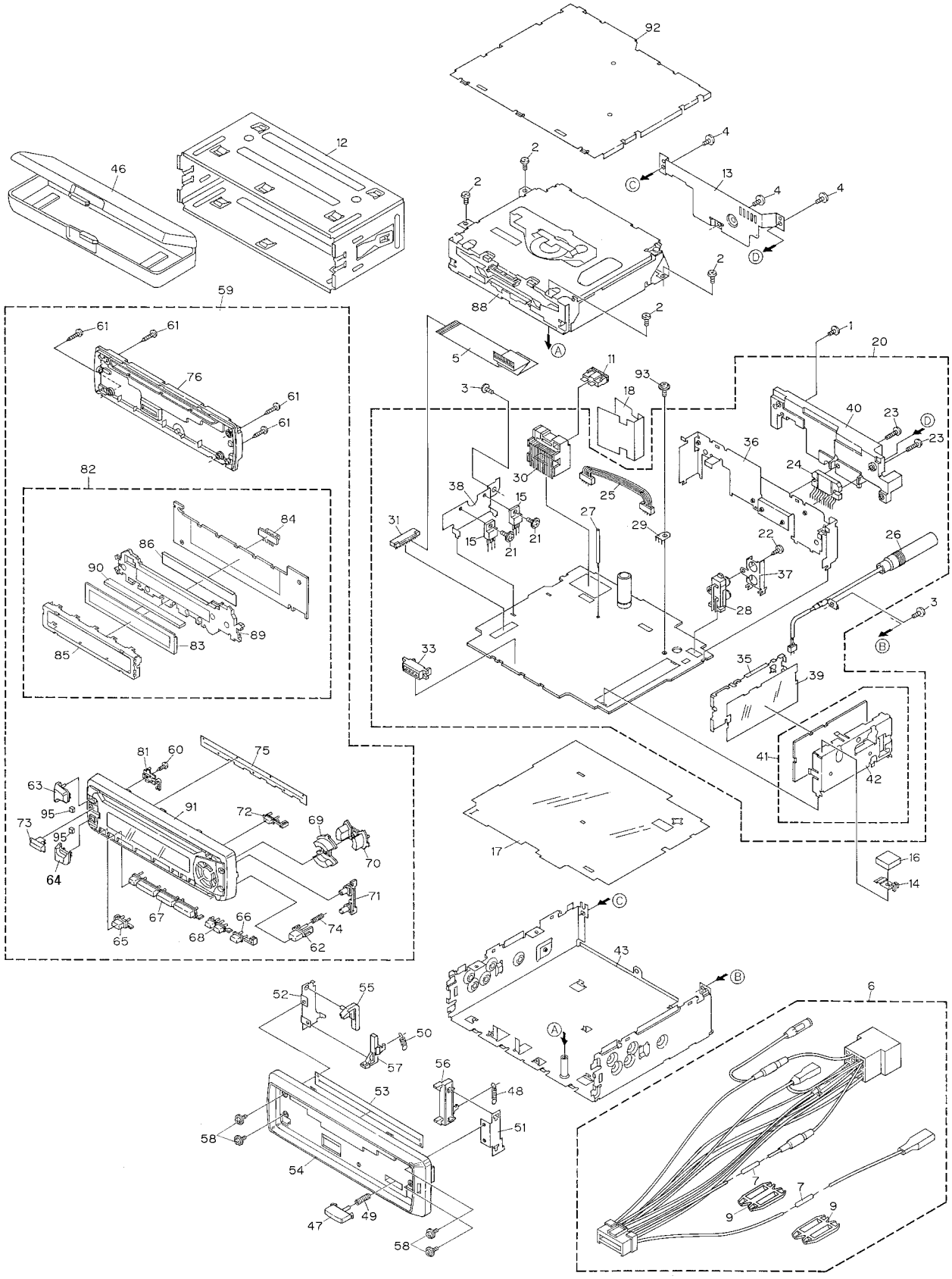
● **DEH-2000R/X1N/EW**



● EXTERIOR SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Screw	BMZ26P120FMC
	2	Screw	BSZ26P060FMC
	3	Screw	BSZ30P060FMC
	4	Screw	BSZ30P120FMC
	5	Cable	CDE6018
	6	Cord Assy	CDE5754
	7	Resistor	RS1/2PMF102J
	8	•••••	
	9	Cap	CNS1472
	10	•••••	
	11	Fuse(10A)	CEK1136
	12	Holder	CNC6798
	13	Cover	CNC8367
	14	Earth Plate	CNC8368
	15	Transistor(Q981,991)	2SD2396
	16	Spacer	CNM4913
	17	Insulator	CNM6006
	18	Insulator	CNM6224
	19	•••••	
⊗	20	Tuner Amp Unit	CWM6089
	21	Screw	ASZ26P080FMC
	22	Screw	BPZ26P080FMC
	23	Screw	BSZ26P160FMC
	24	IC(IC551)	PAL005A
	25	Connector(CN551)	CDE5996
	26	Antenna Cable(CN502)	CDH1254
	27	Clamper	CEF1006
	28	Pin Jack(CN431)	CKB1028
	29	Terminal(CN501)	CKF1059
	30	Connector(CN951)	CKM1299
*	31	Connector(CN681)	CKS2227
	32	•••••	
	33	Connector(CN651)	CKS3581
	34	•••••	
	35	Holder	CNC7533
	36	Holder	CNC8130
	37	Holder	CNC8041
	38	Holder	CNC8043
	39	Insulator	CNM5967
	40	Heat Sink	CNR1506
	41	FM/AM Tuner Unit	CWE1500
	42	Holder	CNC7532
	43	Chassis Unit	CXB3522
	44	•••••	
	45	•••••	
	46	Case Assy	CXB3520
	47	Button	CAC4836
	48	Spring	CBH1835
	49	Spring	CBH1996
	50	Spring	CBH2208
	51	Bracket	CNC6791
	52	Holder	CNC8042
	53	Cover	CNM6276
	54	Panel	CNS5188
	55	Arm	CNV4692
	56	Arm	CNV4728
	57	Arm	CNV5576
	58	Screw	IMS20P030FZK
	59	Detach Grille Assy	CXB3612
	60	Screw	BPZ20P060FMC
	61	Screw	BPZ20P100FZK
	62	Button(DETACH)	CAC5789
	63	Button(+)	CAC5834
	64	Button(-)	CAC5837
	65	Button(SOURCE)	CAC5983
	66	Button(BAND)	CAC5984
	67	Button(1-6)	CAC5840
	68	Button(TA,PT)	CAC5843
	69	Button(UP,DOWN)	CAC5846
	70	Button(<,>)	CAC5849
	71	Button(F,A)	CAC5852
	72	Button(EJECT)	CAC5853
	73	Button(EQ)	CAC6132
	74	Spring	CBH2210
	75	Cover	CNM6290
	76	Cover	CNS5187
	77	•••••	
	78	•••••	
	79	•••••	
	80	•••••	
	81	Housing	CNV5575
	82	Keyboard Unit	CWM6101
	83	LCD(LCD1801)	CAW1499
	84	Connector(CN1801)	CKS3580
	85	Holder	CNC8036
	86	Sheet	CNM6026
	87	•••••	
	88	CD Mechanism Module	CXK5200
	89	Lighting Conductor	CNV5570
	90	Connector	CNV5571
	91	Grille Unit	CXB3501
	92	Case Unit	CXB4033
	93	Screw	ISS26P055FUC
	94	•••••	
	95	Cushion	CNM6373

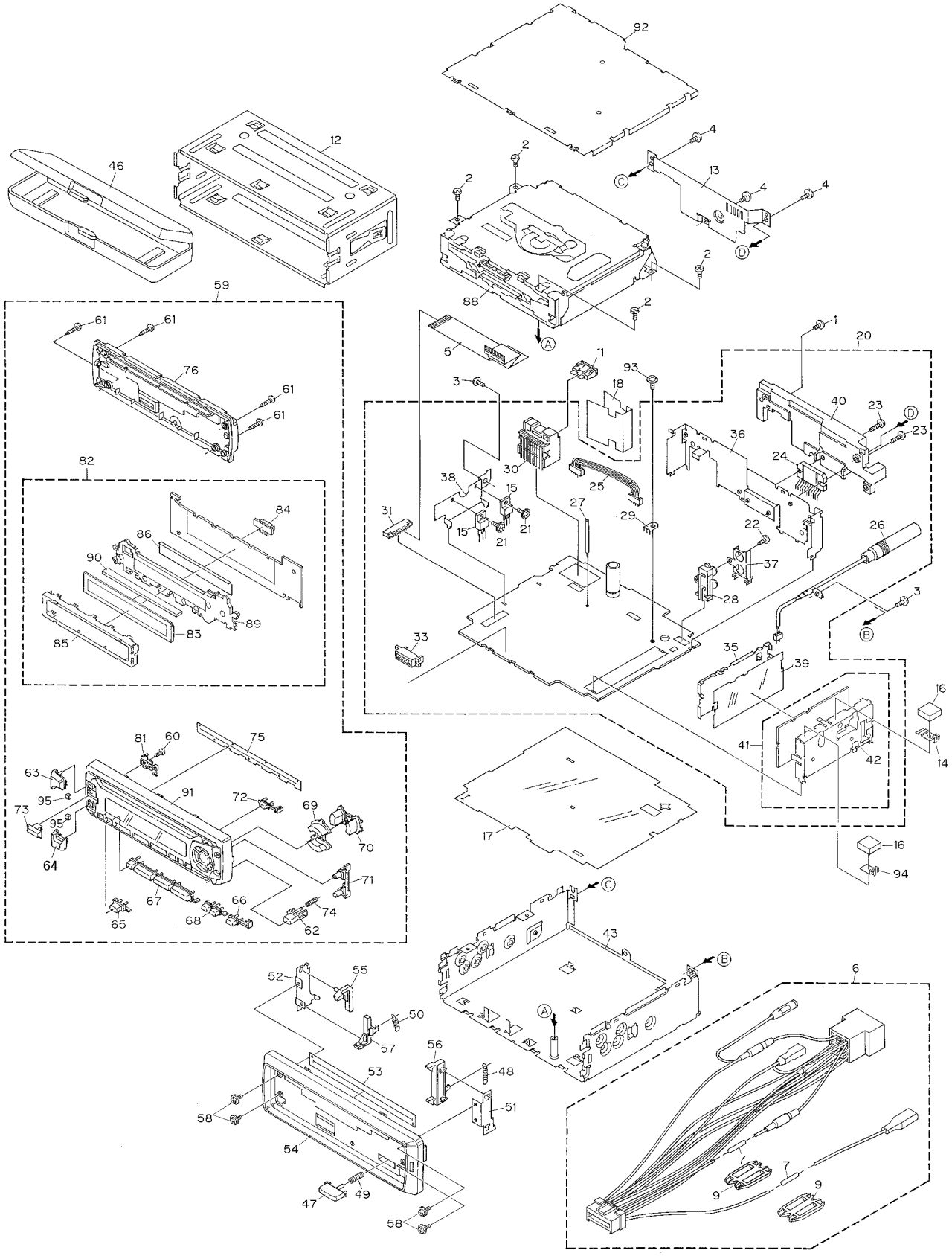
● DEH-2030R/X1N/EW



● EXTERIOR SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Screw	BMZ26P120FMC
	2	Screw	BSZ26P060FMC
	3	Screw	BSZ30P060FMC
	4	Screw	BSZ30P120FMC
	5	Cable	CDE6018
	6	Cord Assy	CDE5754
	7	Resistor	RS1/2PMF102J
	8	•••••	
	9	Cap	CNS1472
	10	•••••	
	11	Fuse(10A)	CEK1136
	12	Holder	CNC6798
	13	Cover	CNC8367
	14	Earth Plate	CNC8368
	15	Transistor(Q981,991)	2SD2396
	16	Spacer	CNM4913
	17	Insulator	CNM6006
	18	Insulator	CNM6224
	19	•••••	
⊗	20	Tuner Amp Unit	CWM6089
	21	Screw	ASZ26P080FMC
	22	Screw	BPZ26P080FMC
	23	Screw	BSZ26P160FMC
	24	IC(IC551)	PAL005A
	25	Connector(CN551)	CDE5996
	26	Antenna Cable(CN502)	CDH1254
	27	Clamper	CEF1006
	28	Pin Jack(CN431)	CKB1028
	29	Terminal(CN501)	CKF1059
	30	Connector(CN951)	CKM1299
*	31	Connector(CN681)	CKS2227
	32	•••••	
	33	Connector(CN651)	CKS3581
	34	•••••	
	35	Holder	CNC7533
	36	Holder	CNC8130
	37	Holder	CNC8041
	38	Holder	CNC8043
	39	Insulator	CNM5967
	40	Heat Sink	CNR1506
	41	FM/AM Tuner Unit	CWE1500
	42	Holder	CNC7532
	43	Chassis Unit	CXB3523
	44	•••••	
	45	•••••	
	46	Case Assy	CXB3520
	47	Button	CAC4836
	48	Spring	CBH1835
	49	Spring	CBH1996
	50	Spring	CBH2208
	51	Bracket	CNC6791
	52	Holder	CNC8042
	53	Cover	CNM6276
	54	Panel	CNS5340
	55	Arm	CNV4692
	56	Arm	CNV4728
	57	Arm	CNV5576
	58	Screw	IMS20P030FZK
	59	Detach Grille Assy	CXB3611
	60	Screw	BPZ20P060FMC
	61	Screw	BPZ20P100FZK
	62	Button(DETACH)	CAC5929
	63	Button(+)	CAC5832
	64	Button(-)	CAC5835
	65	Button(SOURCE)	CAC5983
	66	Button(BAND)	CAC5984
	67	Button(1-6)	CAC5840
	68	Button(TA,PT)	CAC5843
	69	Button(UP,DOWN)	CAC5844
	70	Button(<,>)	CAC5847
	71	Button(F,A)	CAC5850
	72	Button(EJECT)	CAC5853
	73	Button(EQ)	CAC6133
	74	Spring	CBH2210
	75	Cover	CNM6290
	76	Cover	CNS5339
	77	•••••	
	78	•••••	
	79	•••••	
	80	•••••	
	81	Housing	CNV5575
	82	Keyboard Unit	CWM6099
	83	LCD(LCD1801)	CAW1499
	84	Connector(CN1801)	CKS3580
	85	Holder	CNC8036
	86	Sheet	CNM6026
	87	•••••	
	88	CD Mechanism Module	CXK5200
	89	Lighting Conductor	CNV5570
	90	Connector	CNV5571
	91	Grille Unit	CXB3500
	92	Case Unit	CXB4033
	93	Screw	ISS26P055FUC
	94	•••••	
	95	Cushion	CNM6373

● DEH-2020R/X1N/GR

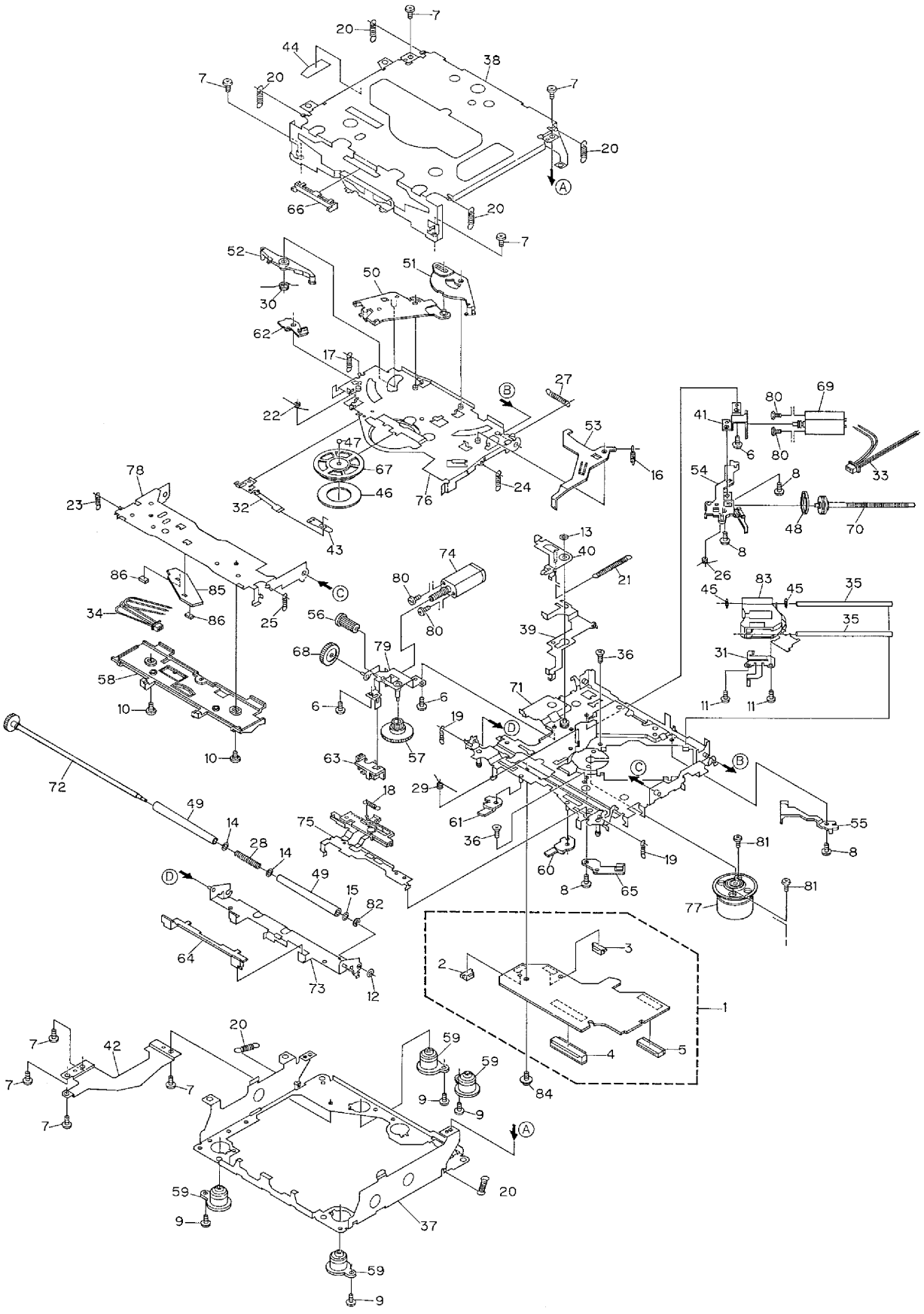


● EXTERIOR SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Screw	BMZ26P120FMC
	2	Screw	BSZ26P060FMC
	3	Screw	BSZ30P060FMC
	4	Screw	BSZ30P120FMC
	5	Cable	CDE6018
	6	Cord Assy	CDE5754
	7	Resistor	RS1/2PMF102J
	8	•••••	
	9	Cap	CNS1472
	10	•••••	
	11	Fuse(10A)	CEK1136
	12	Holder	CNC6798
	13	Cover	CNC8367
	14	Earth Plate	CNC8368
	15	Transistor(Q981,991)	2SD2396
	16	Spacer	CNM4913
	17	Insulator	CNM6006
	18	Insulator	CNM6224
	19	•••••	
⊗	20	Tuner Amp Unit	CWM6087
	21	Screw	ASZ26P080FMC
	22	Screw	BPZ26P080FMC
	23	Screw	BSZ26P160FMC
	24	IC(IC551)	PAL005A
	25	Connector(CN551)	CDE5996
	26	Antenna Cable(CN502)	CDH1254
	27	Clamper	CEF1006
	28	Pin Jack(CN431)	CKB1028
	29	Terminal(CN501)	CKF1059
	30	Connector(CN951)	CKM1299
*	31	Connector(CN681)	CKS2227
	32	•••••	
	33	Connector(CN651)	CKS3581
	34	•••••	
	35	Holder	CNC7533
	36	Holder	CNC8130
	37	Holder	CNC8041
	38	Holder	CNC8043
	39	Insulator	CNM5967
	40	Heat Sink	CNR1506
	41	FM/AM Tuner Unit	CWE1503
	42	Holder	CNC7532
	43	Chassis Unit	CXB3522
	44	•••••	
	45	•••••	
	46	Case Assy	CXB3520
	47	Button	CAC4836
	48	Spring	CBH1835
	49	Spring	CBH1996
	50	Spring	CBH2208

Mark	No.	Description	Part No.
	51	Bracket	CNC6791
	52	Holder	CNC8042
	53	Cover	CNM6276
	54	Panel	CNS5188
	55	Arm	CNV4692
	56	Arm	CNV4728
	57	Arm	CNV5576
	58	Screw	IMS20P030FZK
	59	Detach Grille Assy	CXB3609
	60	Screw	BPZ20P060FMC
	61	Screw	BPZ20P100FZK
	62	Button(DETACH)	CAC5789
	63	Button(+)	CAC5834
	64	Button(-)	CAC5837
	65	Button(SOURCE)	CAC5983
	66	Button(BAND)	CAC5984
	67	Button(1-6)	CAC5840
	68	Button(TA,PT)	CAC5843
	69	Button(UP,DOWN)	CAC5846
	70	Button(<,>)	CAC5849
	71	Button(F,A)	CAC5852
	72	Button(EJECT)	CAC5853
	73	Button(EQ)	CAC6132
	74	Spring	CBH2210
	75	Cover	CNM6290
	76	Cover	CNS5187
	77	•••••	
	78	•••••	
	79	•••••	
	80	•••••	
	81	Housing	CNV5575
	82	Keyboard Unit	CWM6099
	83	LCD(LCD1801)	CAW1499
	84	Connector(CN1801)	CKS3580
	85	Holder	CNC8036
	86	Sheet	CNM6026
	87	•••••	
	88	CD Mechanism Module	CXK5200
	89	Lighting Conductor	CNV5570
	90	Connector	CNV5571
	91	Grille Unit	CXB3498
	92	Case Unit	CXB4033
	93	Screw	ISS26P055FUC
	94	Earth Plate	CNC8369
	95	Cushion	CNM6373

2.3 CD MECHANISM MODULE



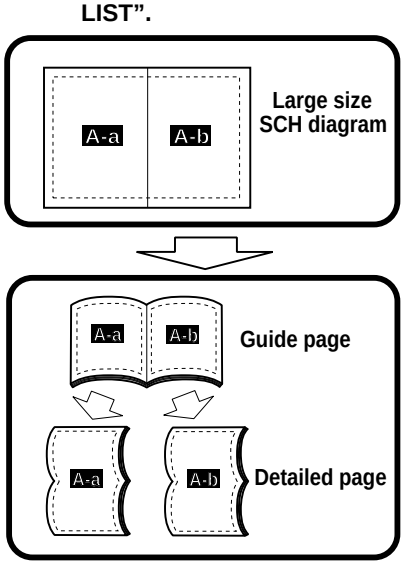
● CD MECHANISM MODULE SECTION PARTS LIST

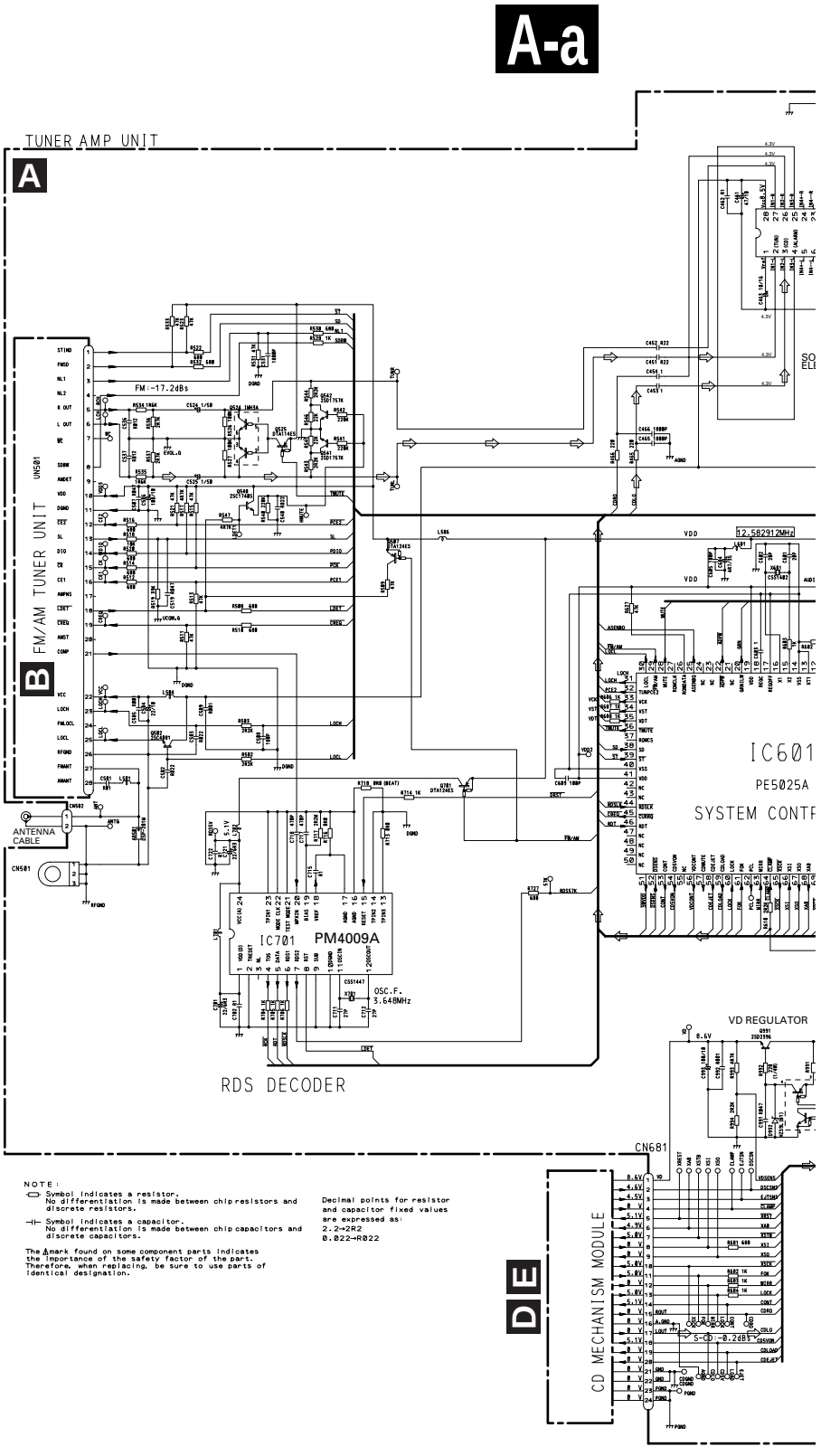
Mark	No.	Description	Part No.
	1	Control Unit	CWX2344
	2	Connector(CN802)	CKS2192
	3	Connector(CN801)	CKS2193
	4	Connector(CN701)	CKS2773
	5	Connector(CN101)	CKS3486
	6	Screw	BMZ20P030FZK
	7	Screw	BSZ20P040FZK
	8	Screw(M2×3)	CBA1077
	9	Screw(M2×6)	CBA1230
	10	Screw	CBA1243
	11	Screw(M2×4)	CBA1362
	12	Washer	CBF1037
	13	Washer	CBF1038
	14	Washer	CBF1060
*	15	Washer	CBF1075
	16	Spring	CBH2079
	17	Spring	CBH2117
	18	Spring	CBH2082
	19	Spring	CBH2110
	20	Spring	CBH2111
	21	Spring	CBH2114
	22	Spring	CBH2115
	23	Spring	CBH2080
	24	Spring	CBH2118
	25	Spring	CBH2161
	26	Spring	CBH2163
	27	Spring	CBH2189
	28	Spring	CBH2249
	29	Spring	CBH2260
	30	Spring	CBH2262
	31	Spring	CBL1367
	32	Spring	CBL1369
	33	Connector	CDE5531
	34	Connector	CDE5532
	35	Shaft	CLA3304
	36	Screw(M2.6×6)	CBA1458
	37	Frame	CNC7544
	38	Frame	CNC7545
	39	Lever	CNC7546
	40	Arm	CNC7739
	41	Bracket	CNC7798
	42	Plate	CNC8090
	43	Spacer	CNM3315
	44	Sheet	CNM6170
	45	Cushion	CNM6204
	46	Sheet	CNM6215
	47	Ball	CNR1189
	48	Belt	CNT1086
	49	Roller	CNV4509
	50	Arm	CNV5246
	51	Arm	CNV5247
	52	Arm	CNV5248
	53	Arm	CNV5249
	54	Guide	CNV5254
	55	Guide	CNV5255
	56	Gear	CNV5257
	57	Gear	CNV5256
	58	Guide	CNV5259
	59	Damper	CNV5266
	60	Arm	CNV5359
	61	Arm	CNV5360
	62	Arm	CNV5361
	63	Guide	CNV5509
	64	Guide	CNV5510
	65	Holder	CNV5578
	66	Guide	CNV5751
	67	Clamper	CNV5758
	68	Gear	CNV5813
	69	Motor Unit(M1)	CXB2190
	70	Screw Unit	CXB2191
	71	Chassis Unit	CXB2192
	72	Gear Unit	CXB2193
	73	Arm Unit	CXB2194
	74	Motor Unit(M2)	CXB2195
	75	Lever Unit	CXB2553
	76	Arm Unit	CXB2554
	77	Motor Unit(M3)	CXB2562
	78	Arm Unit	CXB2795
	79	Bracket Unit	CXB4071
	80	Screw	JFZ20P025FMC
	81	Screw	JGZ17P025FZK
	82	Washer	YE15FUC
	83	Pickup Unit(Service)(P8)	CXX1285
	84	Screw	IMS26P030FMC
*	85	PCB	CNX2982
	86	Photo-transistor(Q1, 2)	CPT230SX-TU

3. SCHEMATIC DIAGRAM

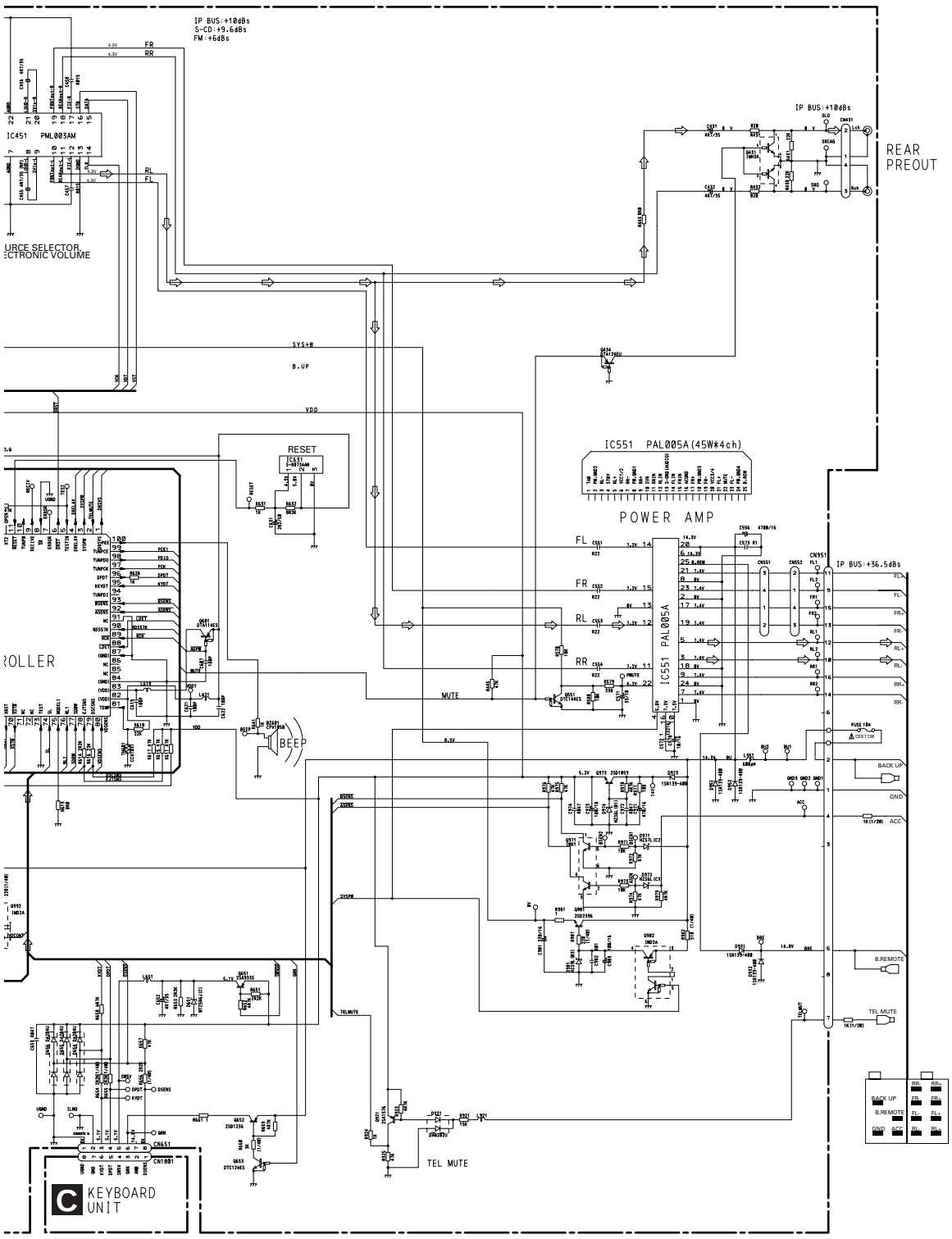
3.1 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)(DEH-2000R/X1N/EW, DEH-2030R/X1N/EW)

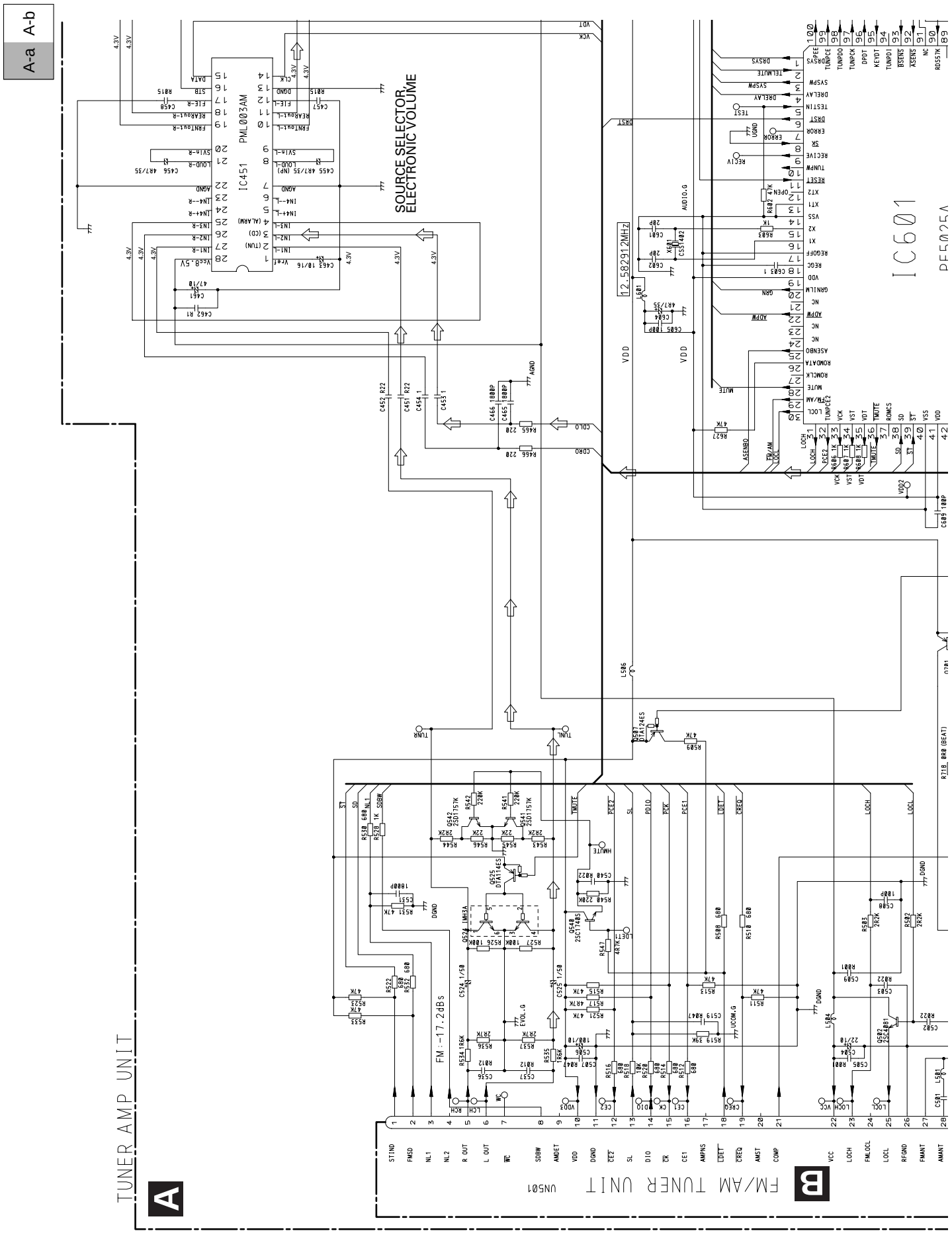
Note: When ordering service parts, be sure to refer to "EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".

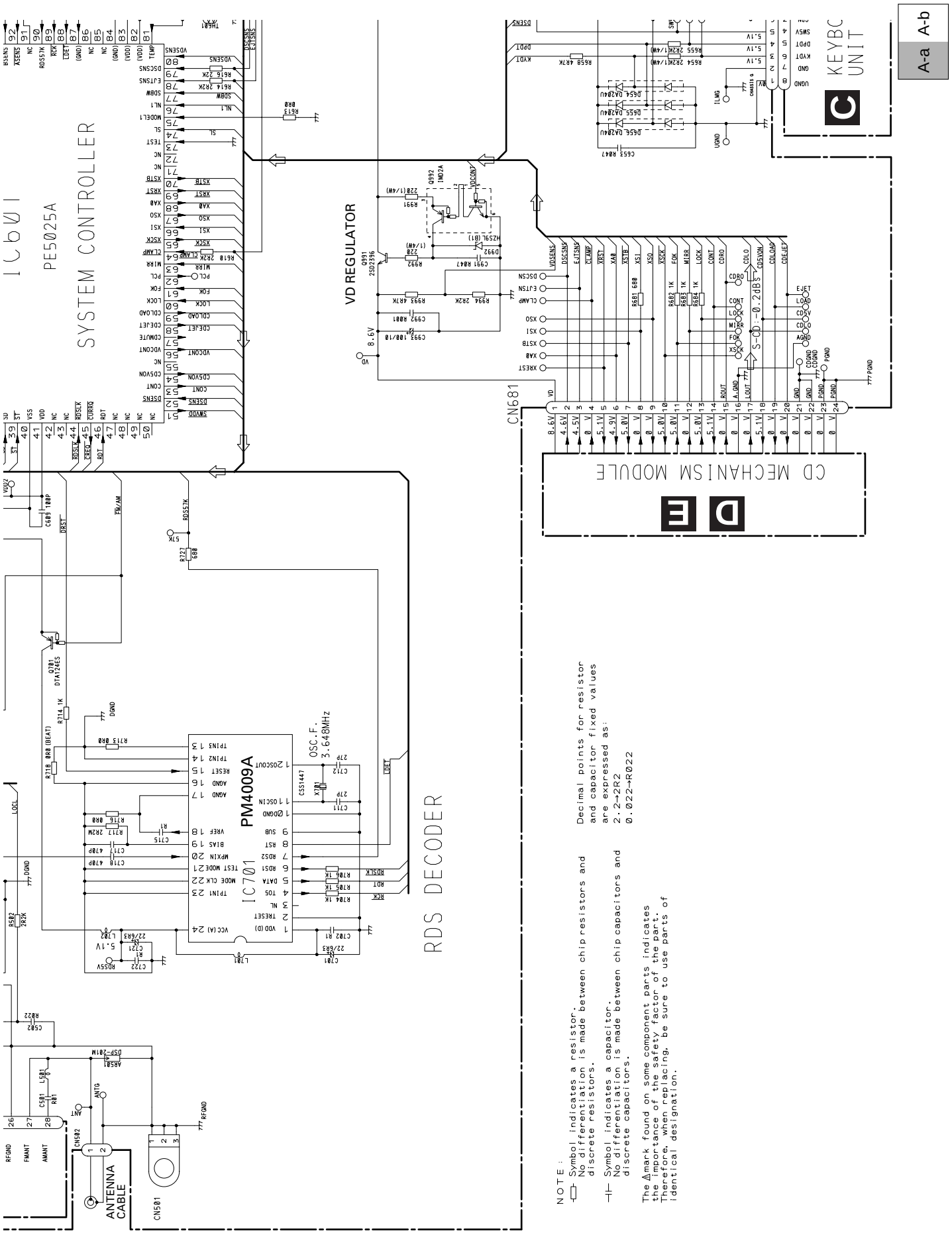




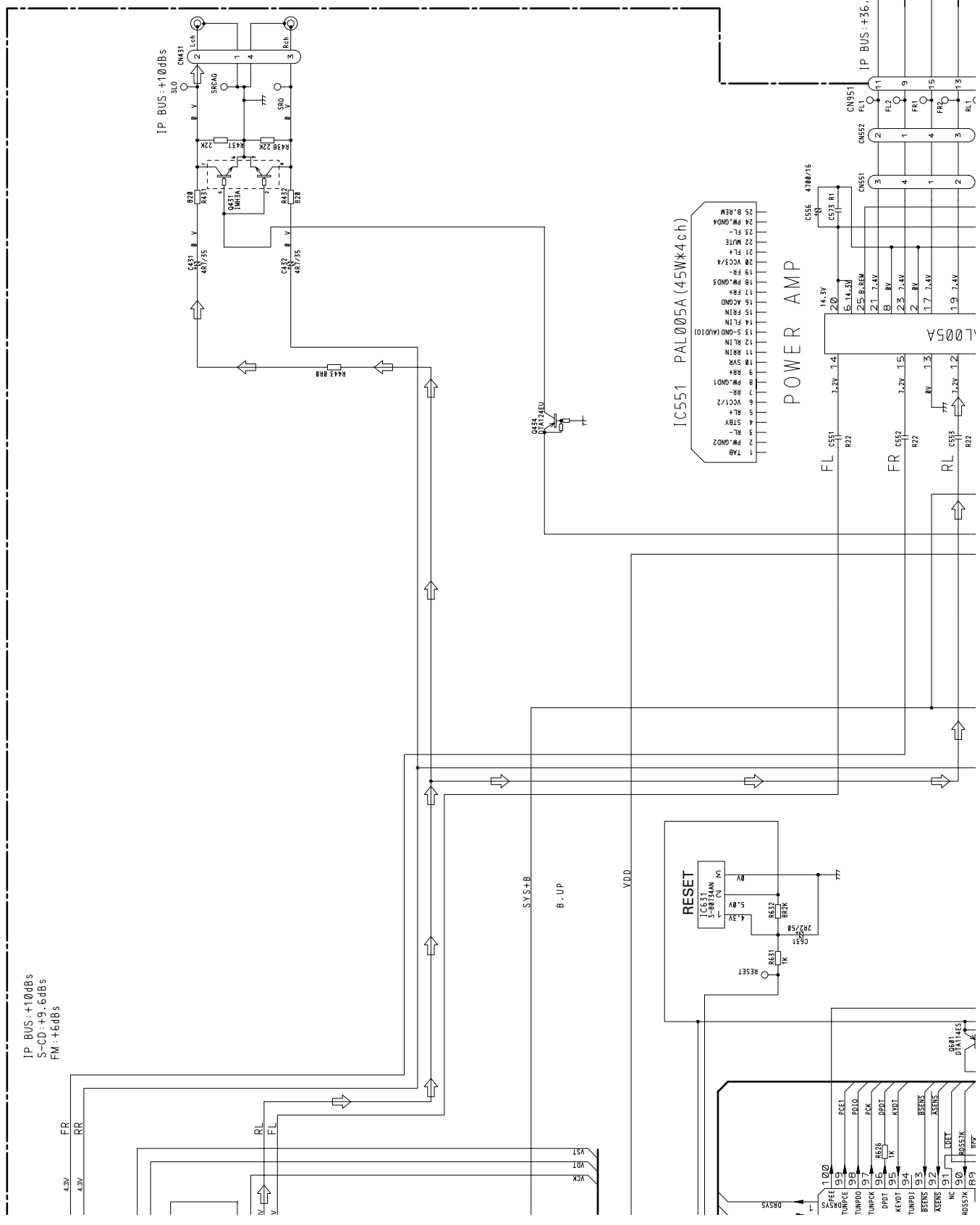
A-b

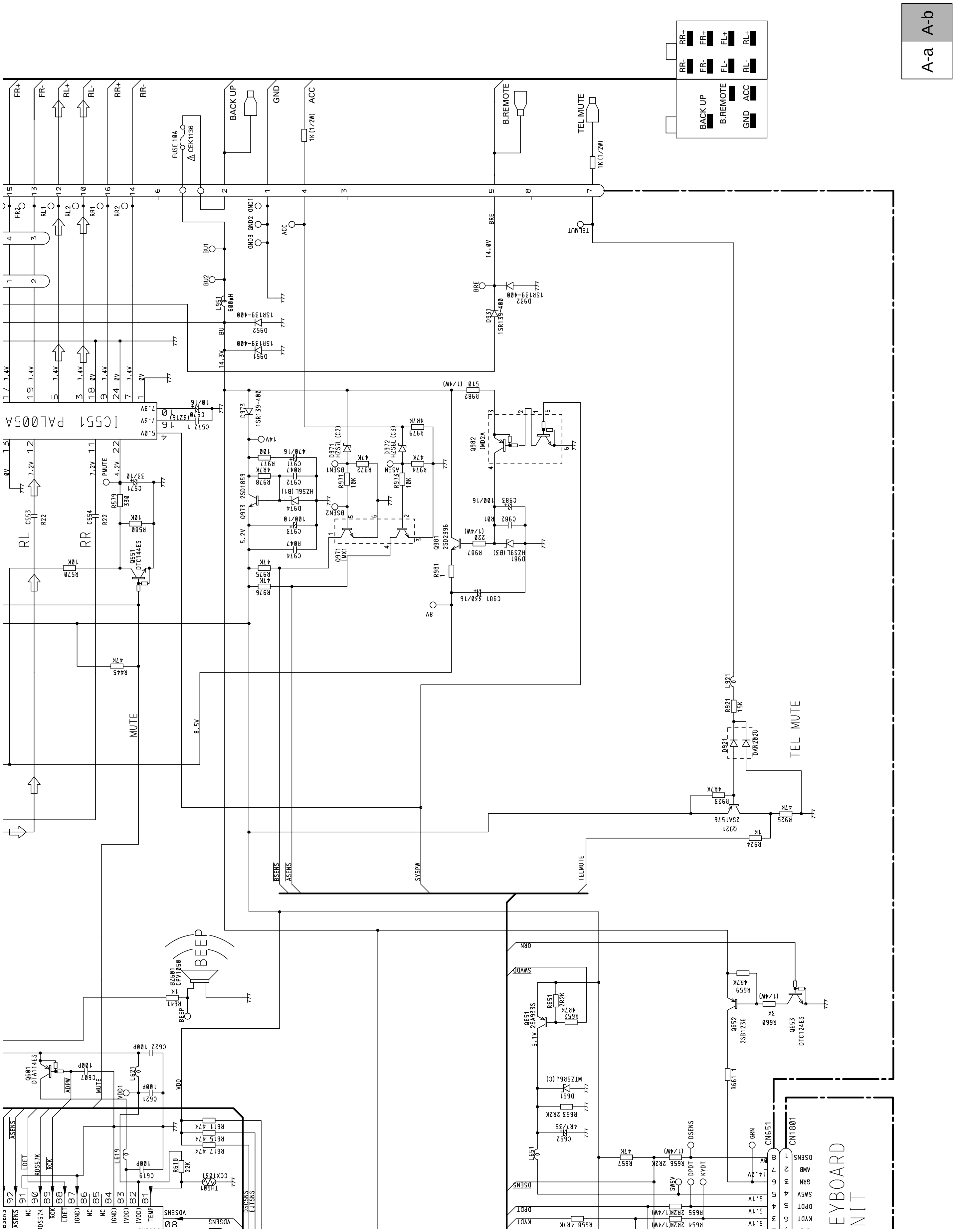

IP BUS:+10dBs
S-CD:+9.6dBs
FM:+6dBs
IC451 PML003AM
FR
RR
RL
FL
IP BUS:+10dBs
REAR
PREOUT
SYS+B
B.UP
VDD
RESET
IC551 PAL005A(45W*4ch)
POWER AMP
IC551 PAL005A
FL
FR
RL
RR
MUTE
BEEP
IP BUS:+36.5dBs
BACK UP
GND
ACC
B.REMOTE
TEL MUTE
TEL MUTE
KEYBOARD
UNIT


A-b
A-a
SOURCE SELECTOR, ELECTRONIC VOLUME
IC451
PML003AM
IC601
12.582912MHz
TUNER AMP UNIT
FM/AM TUNER UNIT
A
B
FM:-17.2dBs
STIND
FMSD
NL1
NL2
R OUT
L OUT
MC
SDBW
AMDET
VDD
DGND
CE2
SL
DIO
CK
CE1
AMPNS
LDET
CREQ
AMST
COMP
VCC
LOCH
FMLOCL
LOCL
RFGND
FMANT
AMANT


SYSTEM CONTROLLER
PE5025A
VD REGULATOR
RDS DECODER
PM4009A
IC701
OSC.F.
3.648MHz
CD MECHANISM MODULE
KEY&C UNIT
S-CD:-0.2dB
ANTENNA CABLE
CN681
CN501
CN502
Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022
NOTE:
Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.
The Δmark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

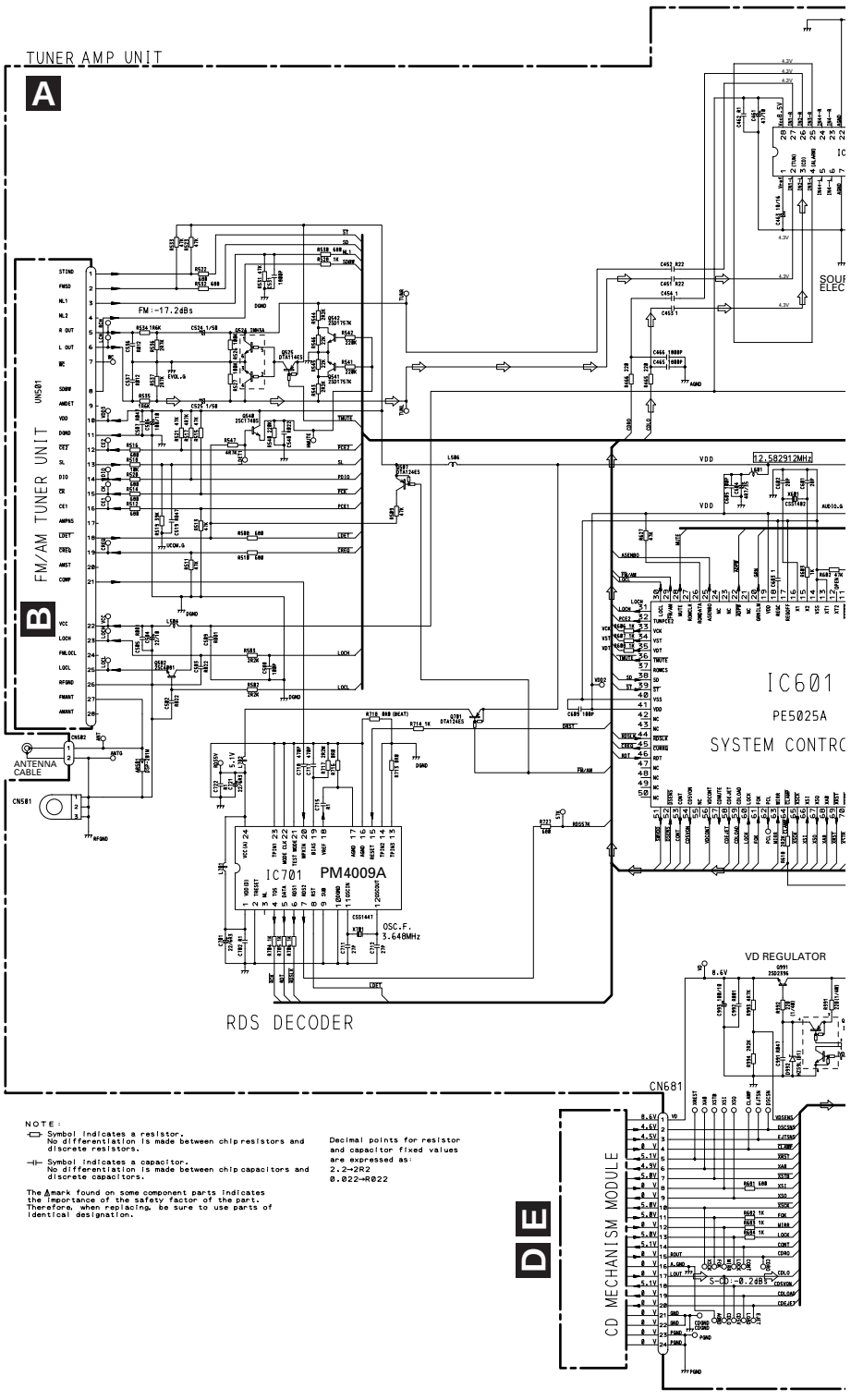
A-a A-b


REAR
PREOUT
IP BUS:+10dBs
IP BUS:+36.5dBs
IC551 PAL005A(45W*4ch)
POWER AMP
FL
FR
RL
RESET
IC631
S-80734AN
IP BUS:+10dBs
S-CD:+9.6dBs
FM:+6dBs
SYS+B
B.UP
VDD

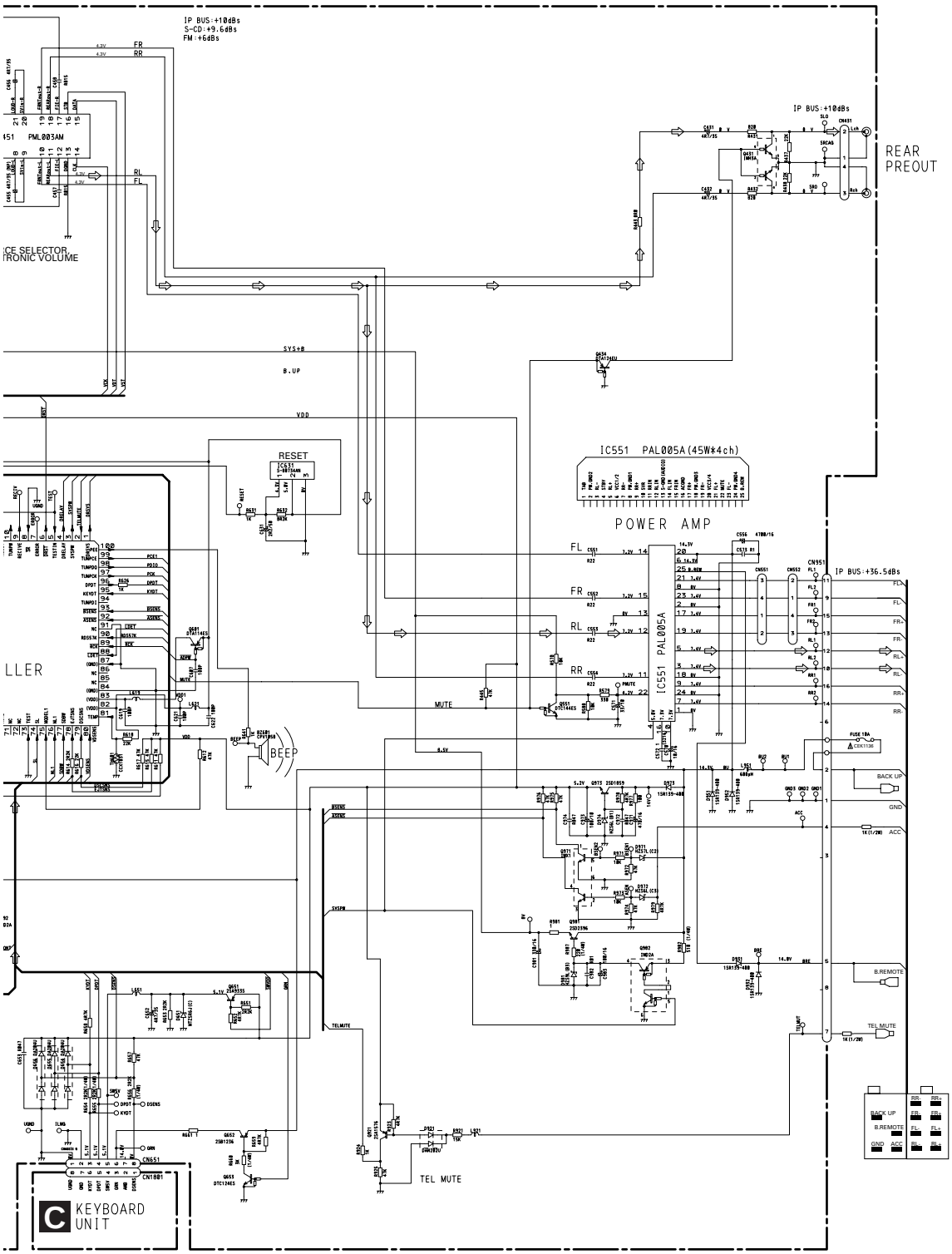

A-a
A-b
RR+
FR+
FL+
RL+
RR-
FR-
FL-
RL-
BACK UP
B.REMOTE
ACC
GND
TEL MUTE
FUSE 10A
CEK1136
1K(1/2W)
IC551 PAL005A
RL
RR
MUTE
BEEP
TEL MUTE
BSENS
ASENS
SYSPW
TELMUTE
CN651
CN1801
KEYBOARD UNIT

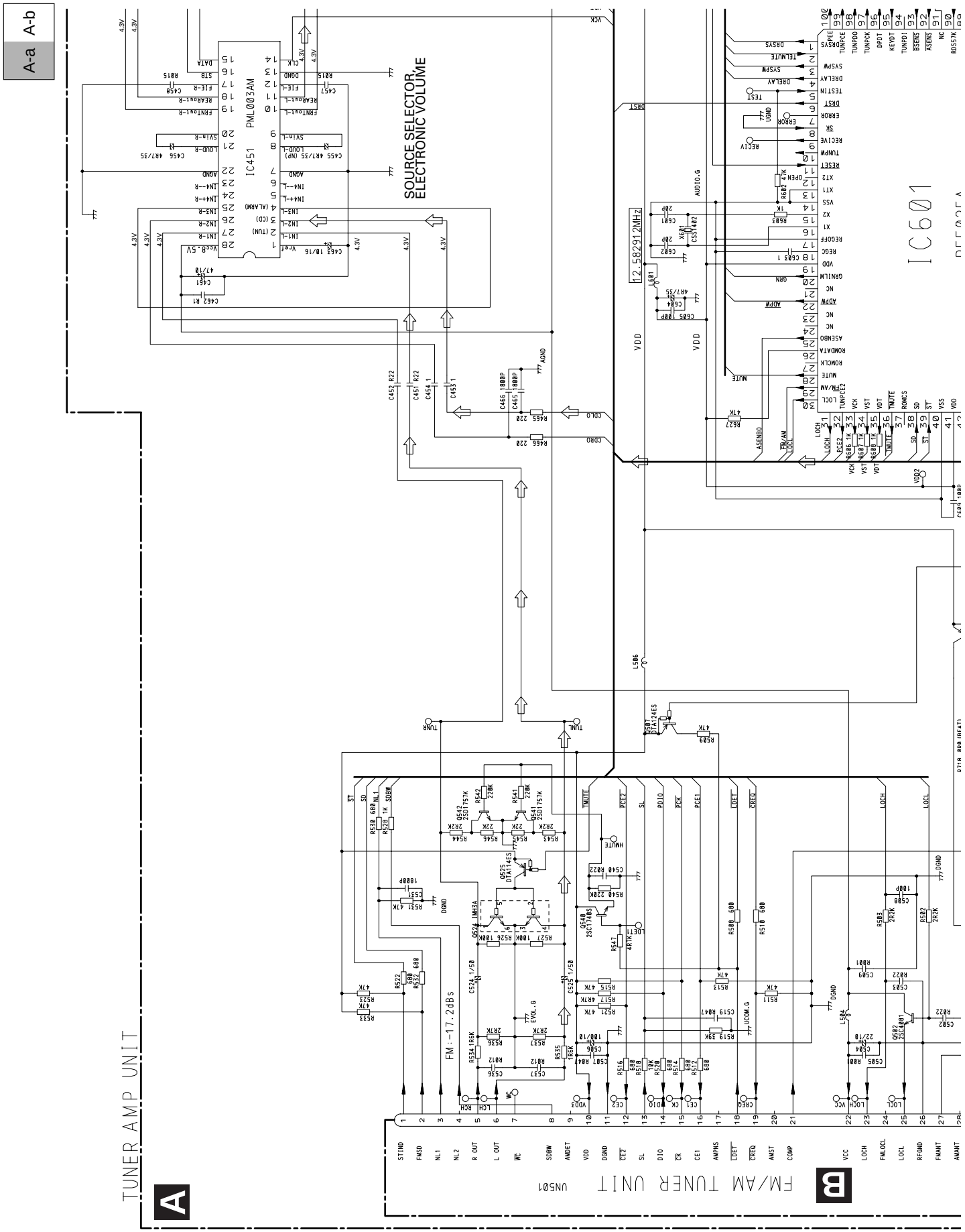
3.2 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)(DEH-2020R/X1N/GR)

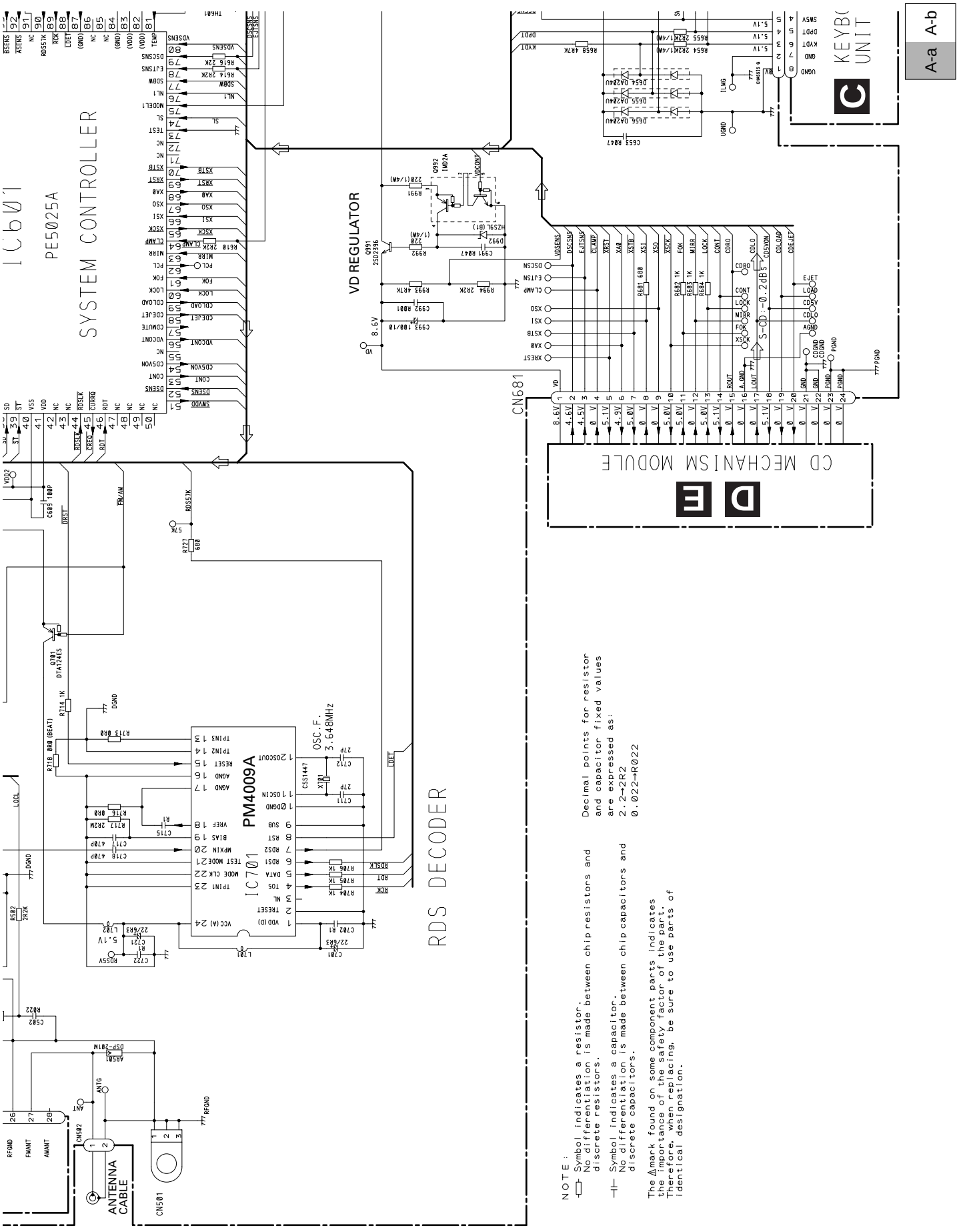
A-a

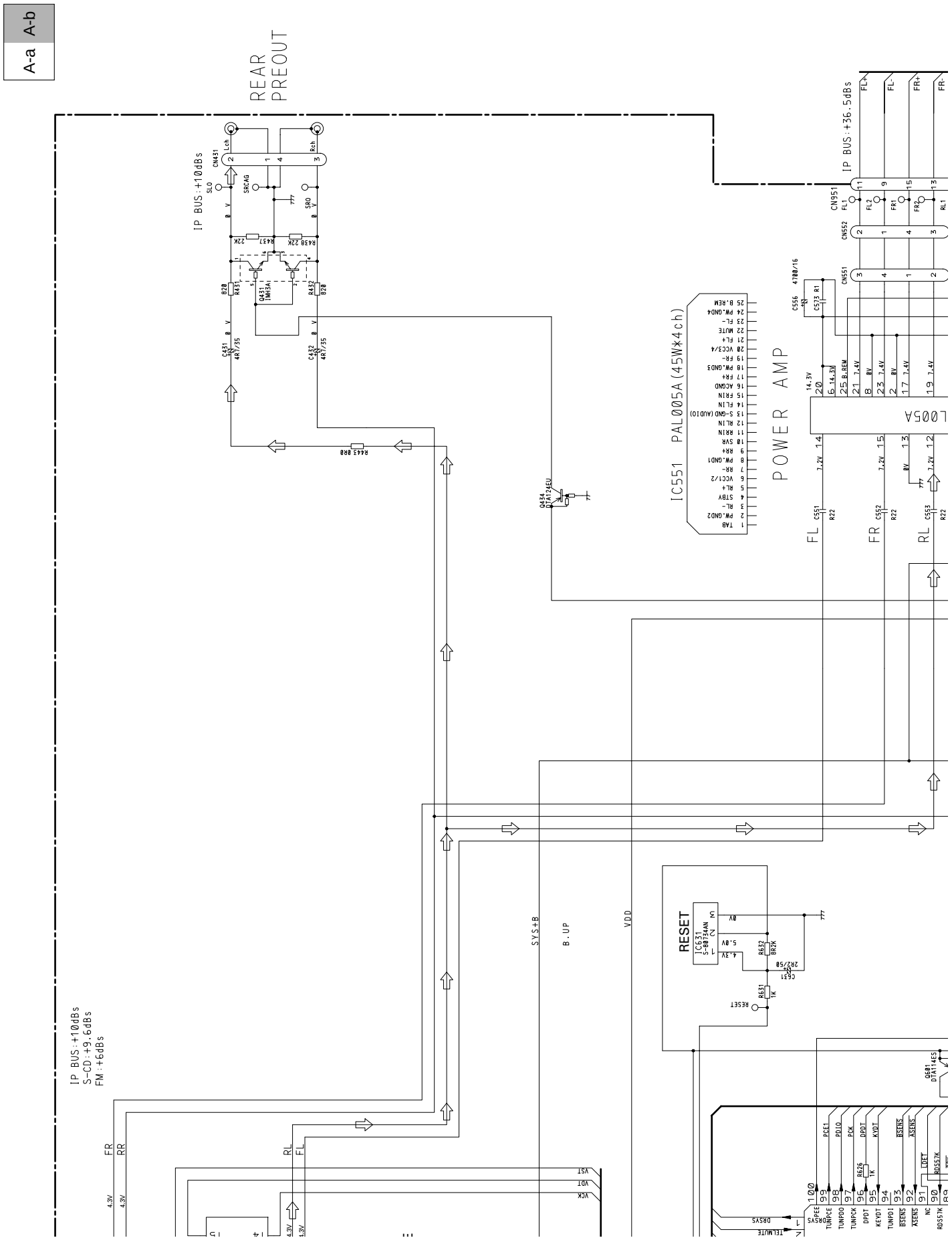


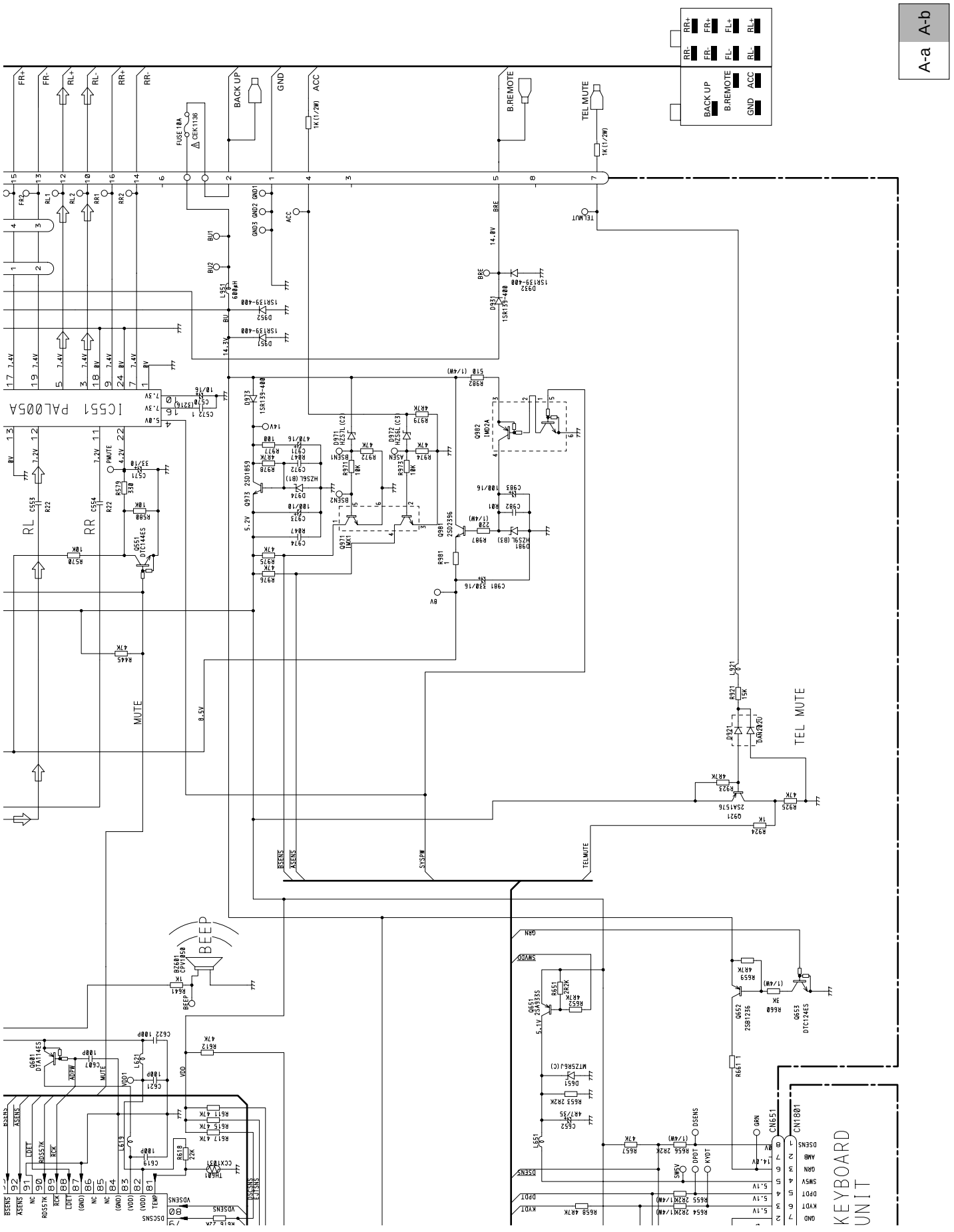
A-b


IP BUS:+10dBs
S-CD:+9.6dBs
FM:+6dBs
REAR PREOUT
IC551 PAL005A(45W*4ch)
POWER AMP
RESET
MUTE
BEEP
TEL MUTE
SYS+B
B.UP
VDD
FL
FR
RL
RR
BACK UP
GND
ACC
B.REMOTE
TEL MUTE
CN651
CN1801
KEYBOARD UNIT

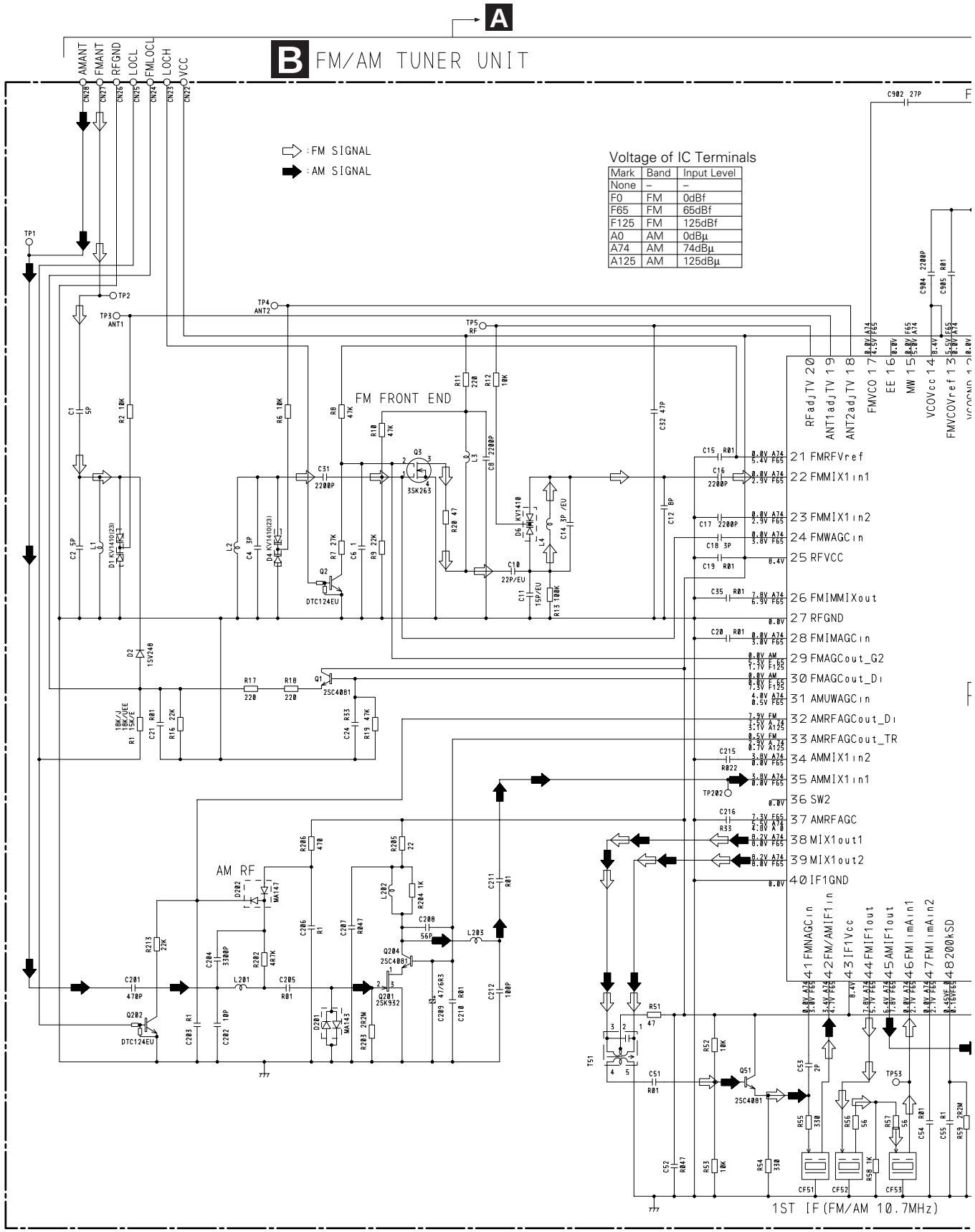

A-b
A-a
SOURCE SELECTOR,
ELECTRONIC VOLUME
IC451 PML003AM
IC601
12.582912MHz
TUNER AMP UNIT
FM/AM TUNER UNIT
A
B
STIND
FMSD
NL1
NL2
R OUT
L OUT
WC
SDBW
AMDET
VDD
DGND
CE2
SL
DIO
CK
CE1
AMPNS
LDET
CREQ
AMST
COMP
VCC
LOCH
FMLOCL
LOCL
RFGND
FMANT
AMANT

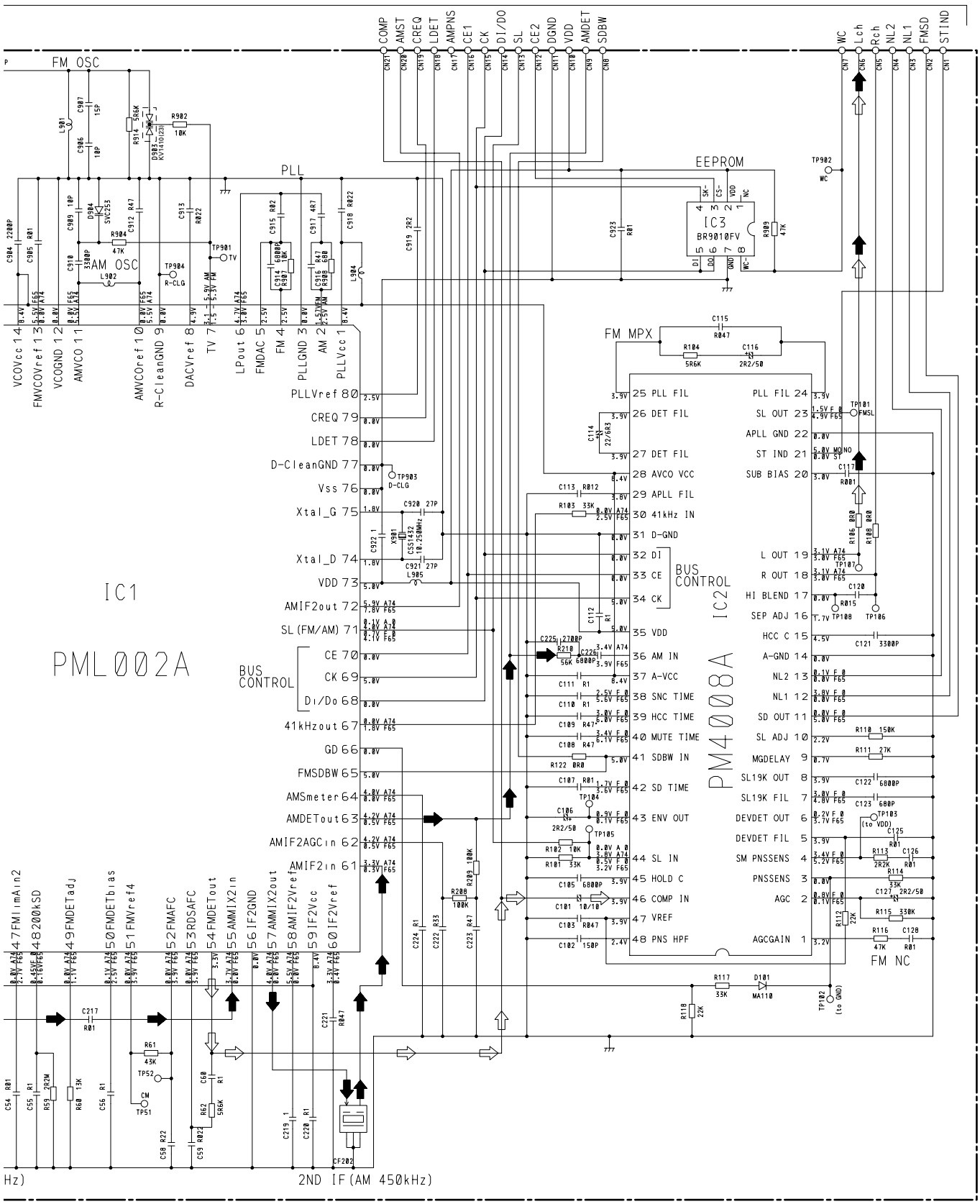

IC6101
SYSTEM CONTROLLER
PE5025A
VD REGULATOR
KEY(UNIT
CD MECHANISM MODULE
S-CD:-0.2dBs
IC701
PM4009A
RDS DECODER
OSC.F.
3.648MHz
ANTENNA CABLE
CN681
CN501
CN502
NOTE:
Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.
Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.
The Δmark found on some component parts indicates the importance of the safety factor of the part.
Therefore, when replacing, be sure to use parts of identical designation.
Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022


A-b
A-a
REAR
PREOUT
IP BUS:+10dBs
IP BUS:+36.5dBs
IC551 PAL005A(45W*4ch)
POWER AMP
FL
FR
RL
RESET
IP BUS:+10dBs
S-CD:+9.6dBs
FM:+6dBs
SYS+B
B.UP
VDD

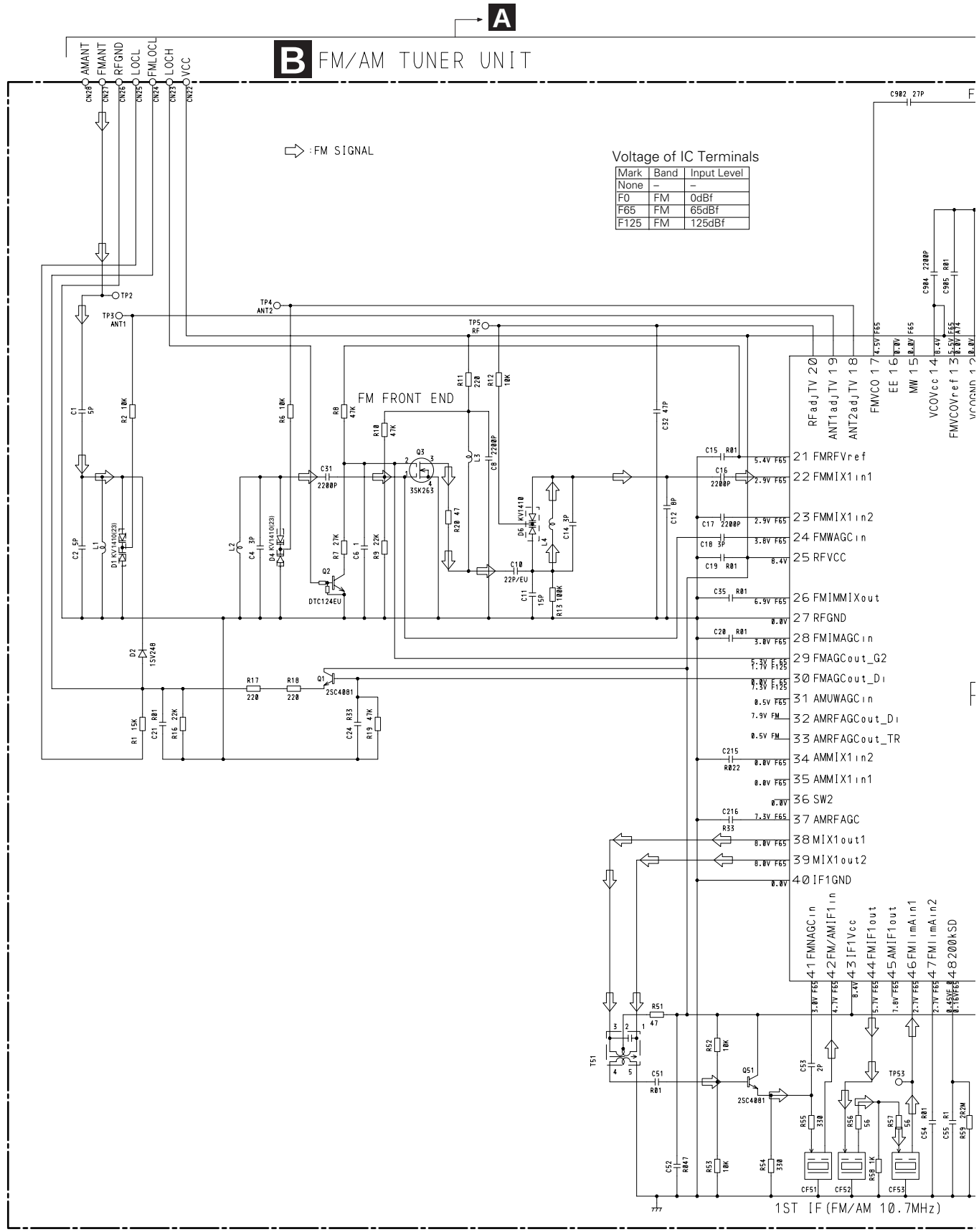

A-b
A-a
FR+
FR-
RL+
RL-
RR+
RR-
BACK UP
GND
ACC
B.REMOTE
TEL MUTE
FUSE 10A
CEK1136
1K(1/2W)
RR+
FR+
FL+
RL+
RR-
FR-
FL-
RL-
BACK UP
B.REMOTE
GND
ACC
IC551 PAL005A
RL
RR
MUTE
PMUTE
TEL MUTE
BEEP
KEYBOARD UNIT
CN651
CN1801

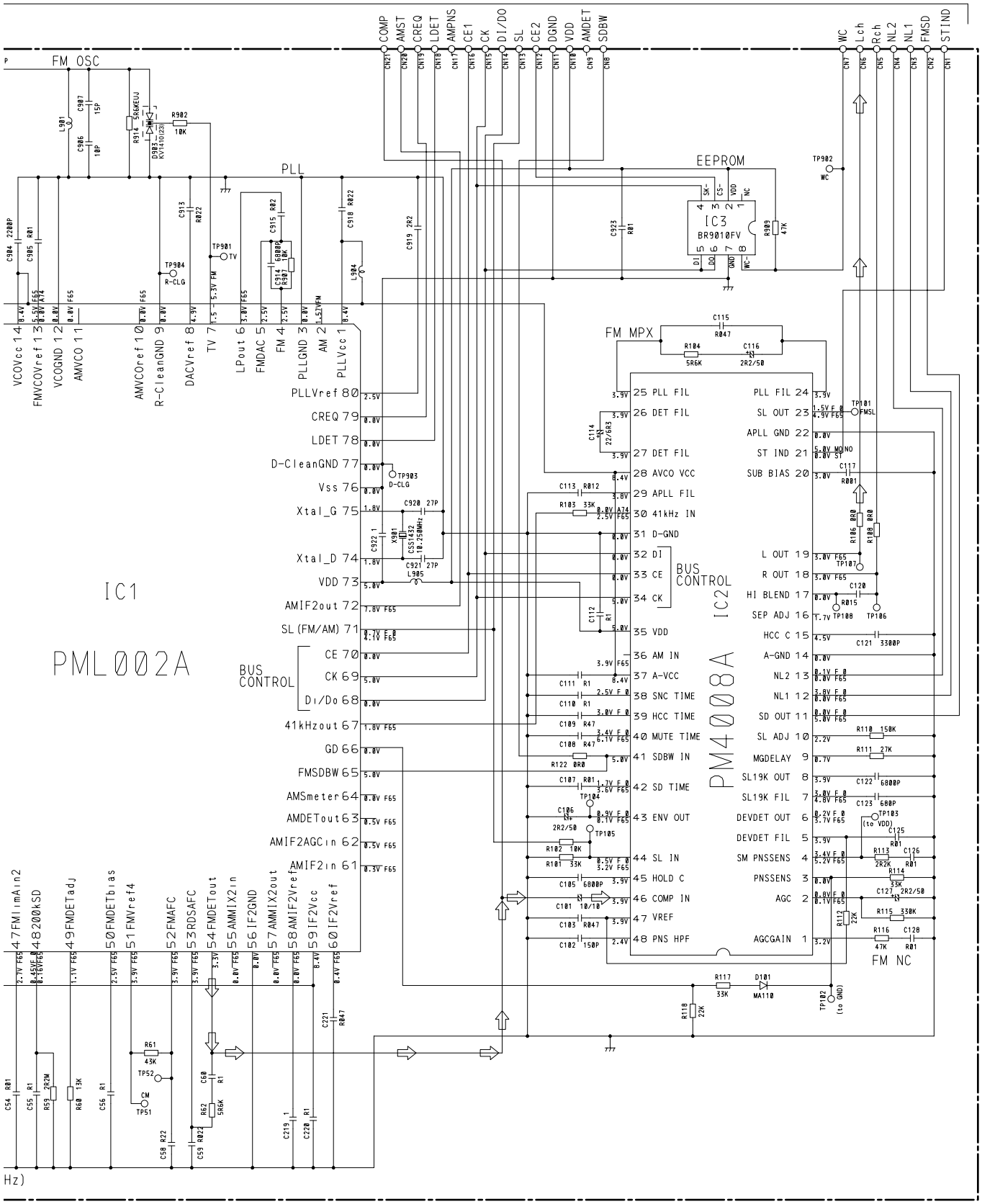
3.3 FM/AM TUNER UNIT(DEH-2000R/X1N/EW, DEH-2030R/X1N/EW)



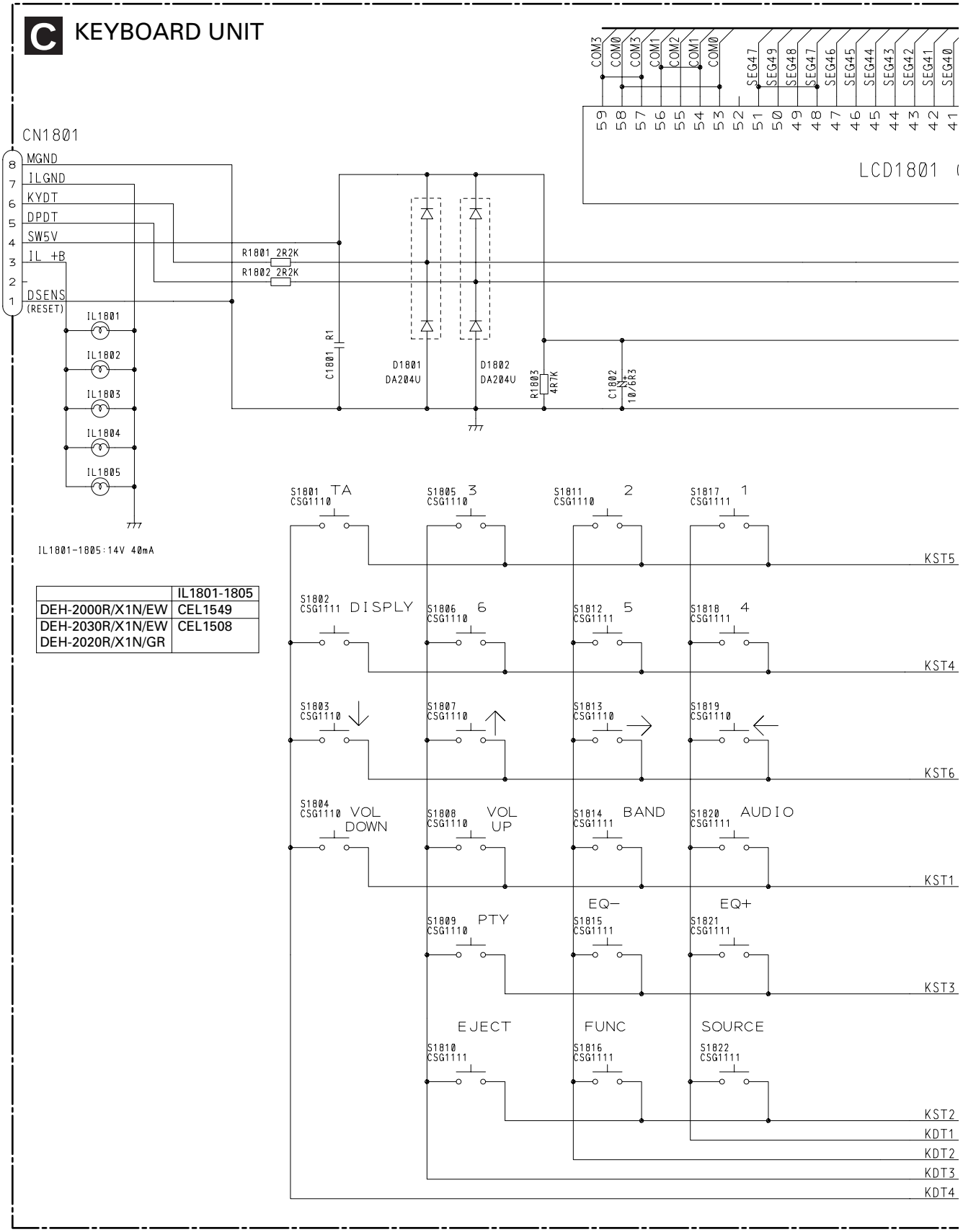

FM OSC
AM OSC
PLL
EEPROM
IC3
BR9010FV
FM MPX
IC1
PML002A
BUS CONTROL
IC2
PM4008A
FM NC
2ND IF(AM 450kHz)
COMP
AMST
CREQ
LDET
AMPNS
CE1
CK
DI/DO
SL
CE2
DGND
VDD
AMDET
SDBW
WC
Lch
Rch
NL2
NL1
FMSD
STIND

3.4 FM/AM TUNER UNIT(DEH-2020R/X1N/GR)

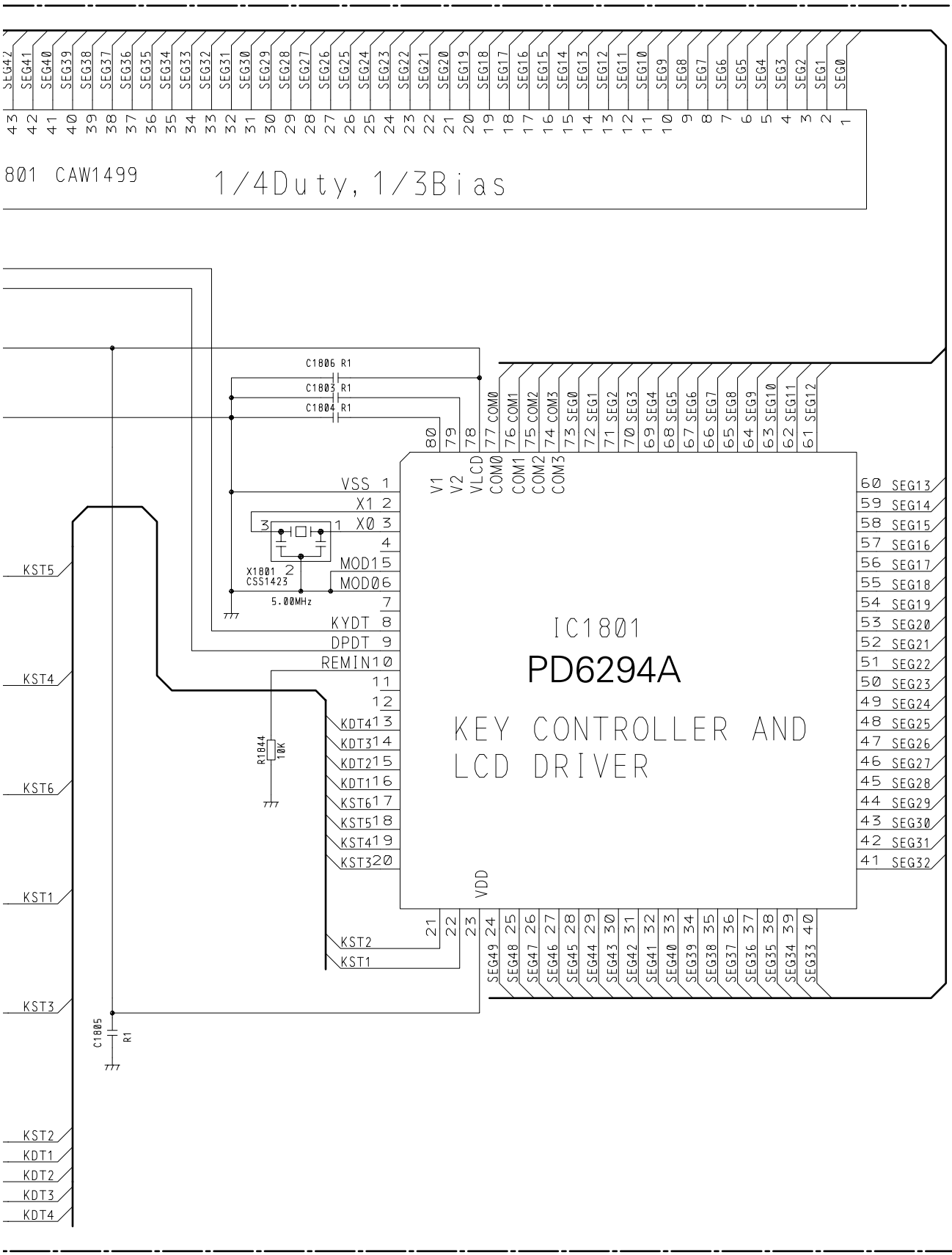



FM OSC
PLL
EEPROM
IC3
BR9010FV
FM MPX
IC1
PML002A
IC2
PM4008A
BUS CONTROL
FM NC
COMP
AMST
CREQ
LDET
AMPNS
CE1
CK
DI/DO
SL
CE2
DGND
VDD
AMDET
SDBW
WC
Lch
Rch
NL2
NL1
FMSD
STIND
VCOVcc 14
FMVCOVref 13
VCOGND 12
AMVCO 11
AMVCOref 10
R-CleanGND 9
DACVref 8
TV 7
LPout 6
FMDAC 5
FM 4
PLLGND 3
AM 2
PLLVcc 1
PLLVref 80
CREQ 79
LDET 78
D-CleanGND 77
Vss 76
Xtal_G 75
Xtal_D 74
VDD 73
AMIF2out 72
SL (FM/AM) 71
CE 70
CK 69
DI/DO 68
41kHzout 67
GD 66
FMSDBW 65
AMSmeter 64
AMDETout 63
AMIF2AGCin 62
AMIF2in 61
47 FMIimAin2
48 200kSD
49 FMDETadj
50 FMDETbias
51 FMVref4
52 FMAFC
53 RDSAFC
54 FMDETout
55 AMMIX2in
56 IF2GND
57 AMMIX2out
58 AMIF2Vref
59 IF2Vcc
60 IF2Vref
25 PLL FIL
26 DET FIL
27 DET FIL
28 AVCO VCC
29 APLL FIL
30 41kHz IN
31 D-GND
32 DI
33 CE
34 CK
35 VDD
36 AM IN
37 A-VCC
38 SNC TIME
39 HCC TIME
40 MUTE TIME
41 SDBW IN
42 SD TIME
43 ENV OUT
44 SL IN
45 HOLD C
46 COMP IN
47 VREF
48 PNS HPF
PLL FIL 24
SL OUT 23
APLL GND 22
ST IND 21
SUB BIAS 20
L OUT 19
R OUT 18
HI BLEND 17
SEP ADJ 16
HCC C 15
A-GND 14
NL2 13
NL1 12
SD OUT 11
SL ADJ 10
MGDELAY 9
SL19K OUT 8
SL19K FIL 7
DEVDET OUT 6
DEVDET FIL 5
SM PNSSENS 4
PNSSENS 3
AGC 2
AGCGAIN 1
Hz)

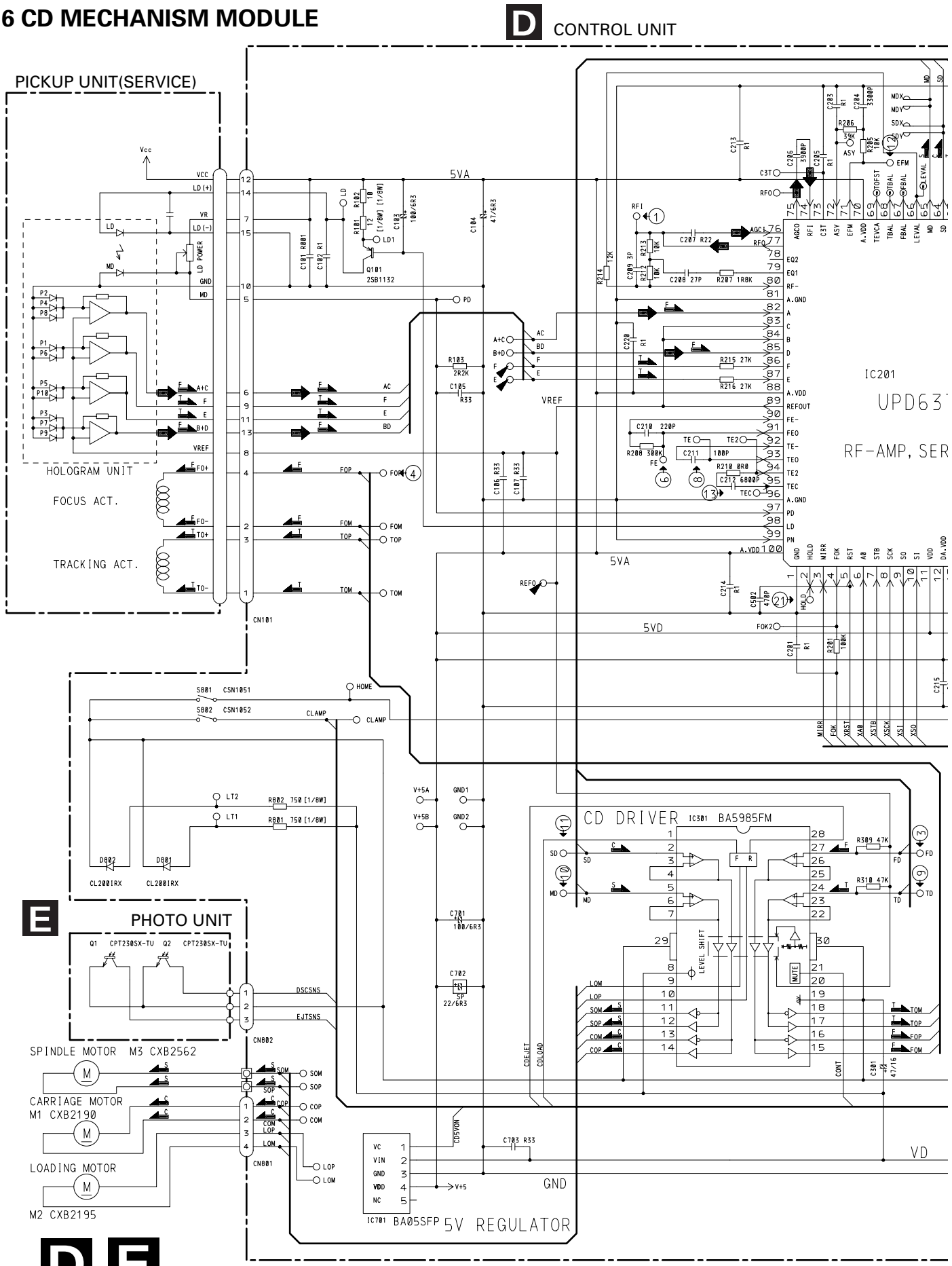
3.5 KEYBOARD UNIT

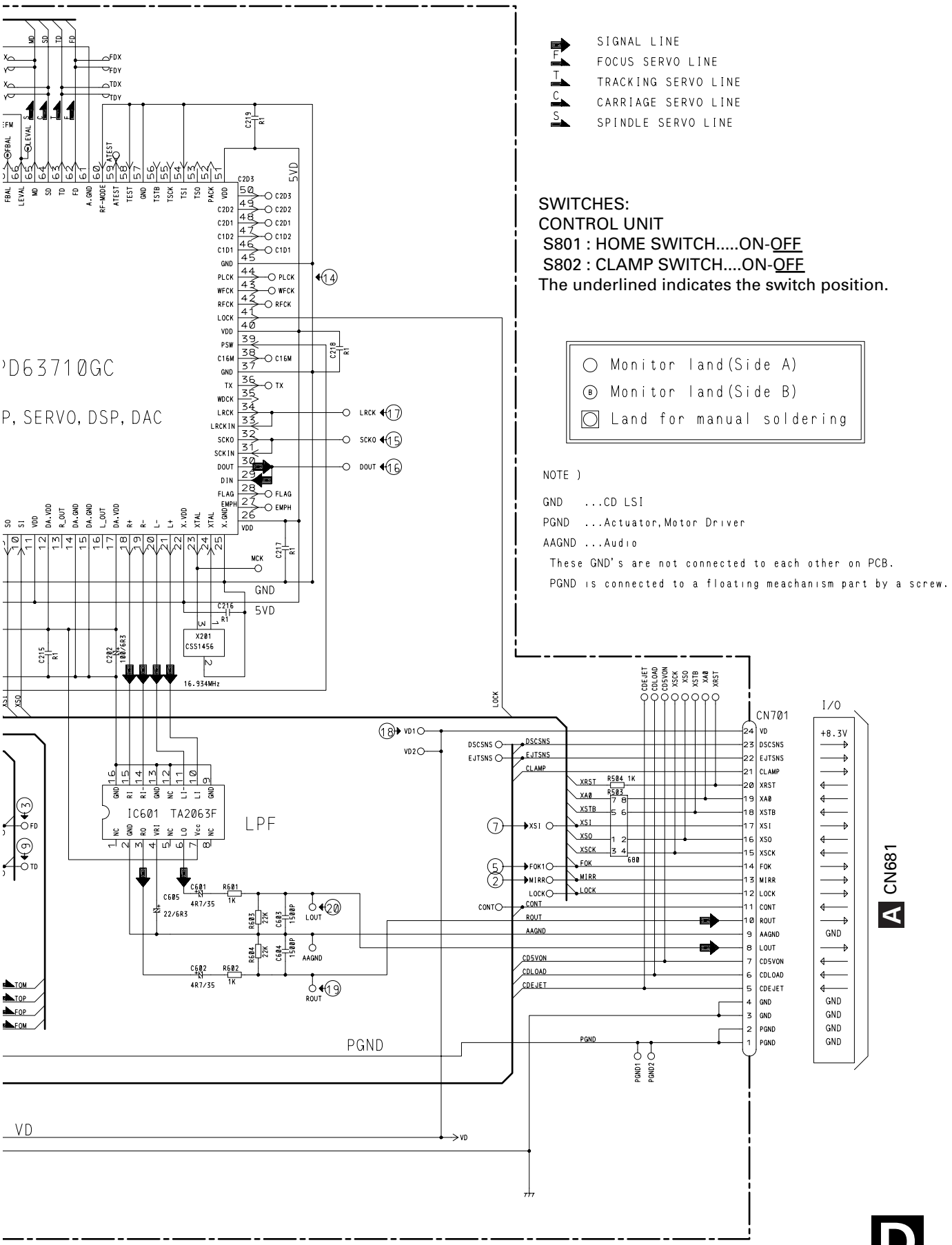


	IL1801-1805
DEH-2000R/X1N/EW	CEL1549
DEH-2030R/X1N/EW DEH-2020R/X1N/GR	CEL1508


801 CAW1499
1/4Duty, 1/3Bias
IC1801
PD6294A
KEY CONTROLLER AND
LCD DRIVER
C1806 R1
C1803 R1
C1804 R1
X1801
CSS1423
5.00MHz
R1844
10K
C1805
R1
KST5
KST4
KST6
KST1
KST3
KST2
KDT1
KDT2
KDT3
KDT4

3.6 CD MECHANISM MODULE

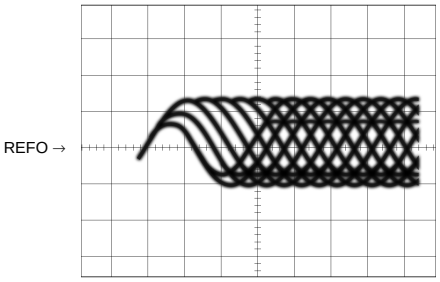



SIGNAL LINE
FOCUS SERVO LINE
TRACKING SERVO LINE
CARRIAGE SERVO LINE
SPINDLE SERVO LINE
SWITCHES:
CONTROL UNIT
S801 : HOME SWITCH.....ON-OFF
S802 : CLAMP SWITCH....ON-OFF
The underlined indicates the switch position.
Monitor land(Side A)
Monitor land(Side B)
Land for manual soldering
NOTE)
GND ...CD LSI
PGND ...Actuator, Motor Driver
AAGND ...Audio
These GND's are not connected to each other on PCB.
PGND is connected to a floating meachanism part by a screw.
D63710GC
P, SERVO, DSP, DAC
IC601 TA2063F
LPF
X201
CSS1456
16.934MHz
CN701
I/O
CN681
PGND
VD
5VD
GND
LOCK

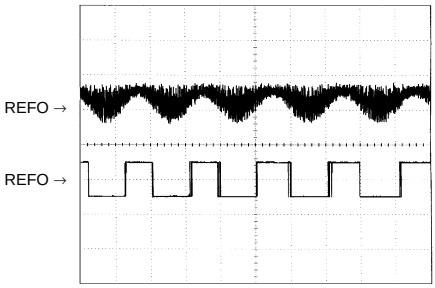
Note:1. The encircled numbers denote measuring pointes in the circuit diagram.
2. Reference voltage
REFO:2.5V

● Waveforms

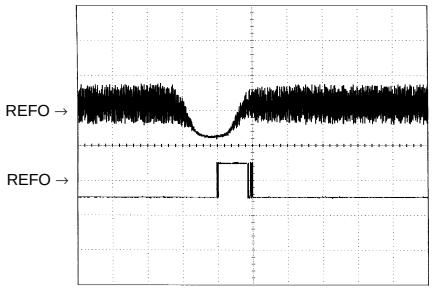
① RFI 0.5V/div. 0.5µs/div.
Normal mode: play



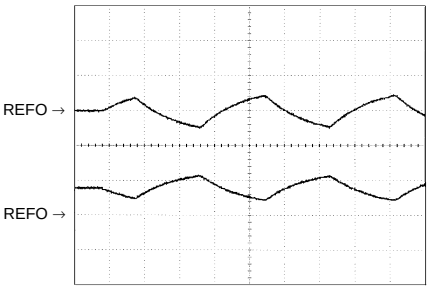
① CH1: RFI 1V/div. 0.5ms/div.
② CH2: MIRR 5V/div.
Test mode: Tracking open



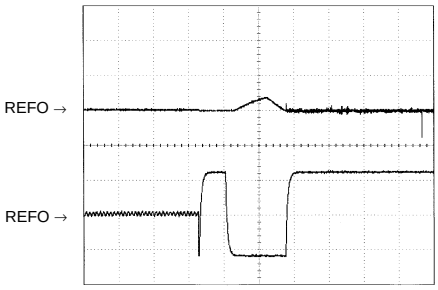
① CH1: RFI 1V/div. 0.5ms/div.
② CH2: MIRR 5V/div.
Normal mode: The defect part passes 800µm



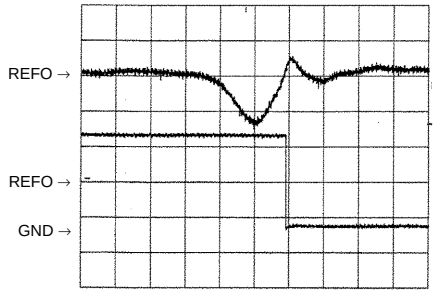
③ CH1: FD 0.5V/div. 0.2s/div.
④ CH2: FO+ 2V/div.
Test mode: No disc, Focus close



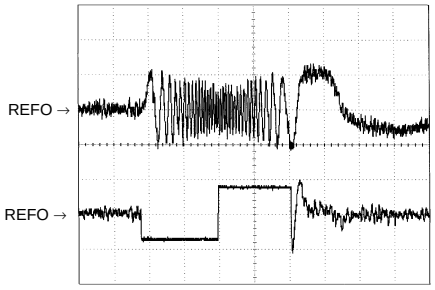
③ CH1: FD 0.5V/div. 0.2s/div.
⑤ CH2: FOK 2V/div.
Normal mode: Focus close



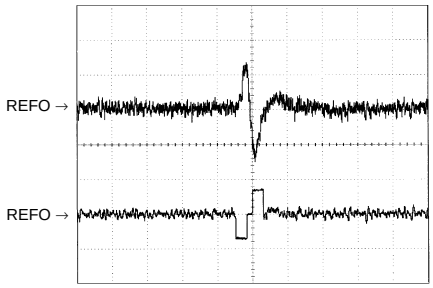
⑥ CH1: FE 0.5V/div. 1ms/div.
⑦ CH2: XSI 2V/div.
Normal mode: Focus close



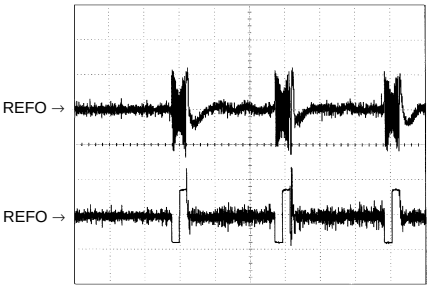
⑧ CH1: TE 0.5V/div. 0.5ms/div.
⑨ CH2: TD 0.5V/div.
Test mode: 32 tracks jump (REV)



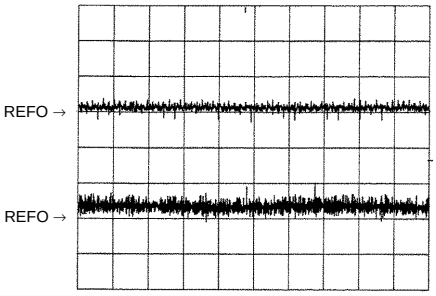
⑧ CH1: TE 0.5V/div. 0.5ms/div.
⑨ CH2: TD 0.5V/div.
Test mode: Single jump (REV)



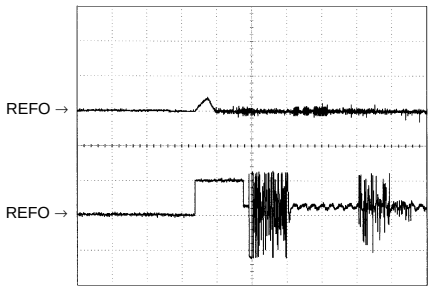
⑧ CH1: TE 0.5V/div. 5ms/div.
⑨ CH2: TD 0.5V/div.
Test mode: 100 tracks jump (REV)



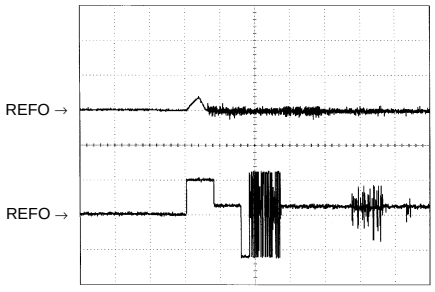
⑥ CH1: FE 0.1V/div. 20ms/div.
③ CH2: FD 0.2V/div.
Normal mode: Play



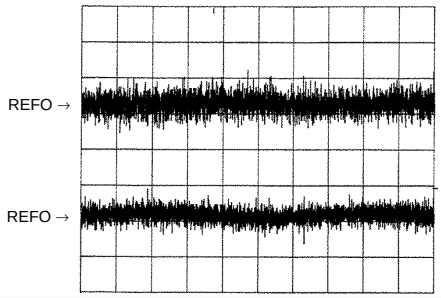
③ CH1: FD 0.5V/div. 0.5s/div.
⑩ CH2: MD 1V/div.
Normal mode: Focus close (12cm)



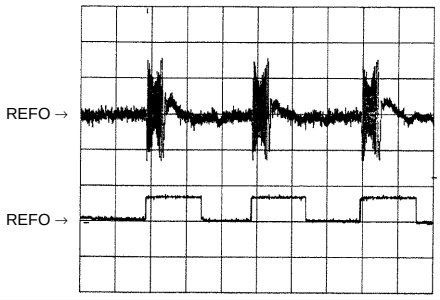
③ CH1: FD 0.5V/div. 0.5s/div.
⑩ CH2: MD 1V/div.
Normal mode: Focus close (8cm)



⑧ CH1: TE 0.2V/div. 20ms/div.
⑨ CH2: TD 0.2V/div.
Normal mode: play

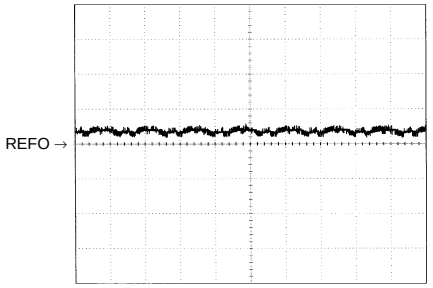


⑧ CH1: TE 0.5V/div. 5ms/div.
⑪ CH2: SD 0.5V/div.
TEST mode: 100 Tracks jump(FWD)

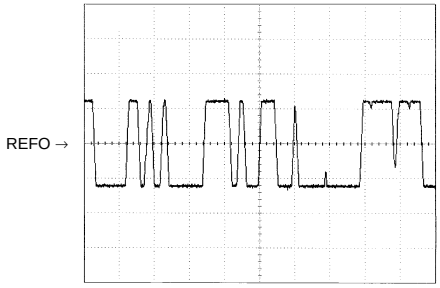


⑩ MD 0.5V/div. 0.1s/div.

Normal mode: Play (12cm)

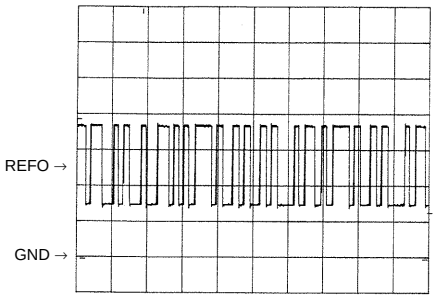


⑩ MD 1V/div. 10ms/div.
Normal mode:
Long Search (12cm)

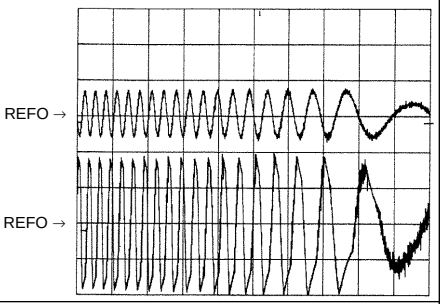


⑫ EFM 1V/div. 5µs/div.

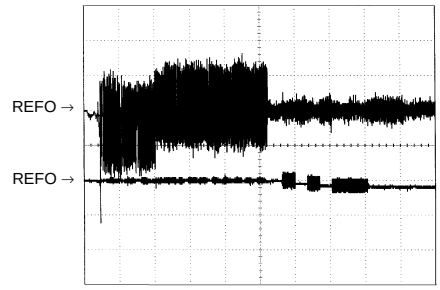
Normal mode: play



⑧ CH1: TE 1V/div. 2ms/div.
⑬ CH2: TEC 1V/div.
Test mode: Focus close
Tracking open

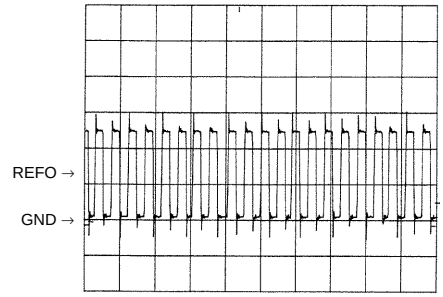


⑧ CH1: TE 0.5V/div. 0.2s/div.
⑥ CH2: FE 0.5V/div.
Normal mode: AGC after focus close



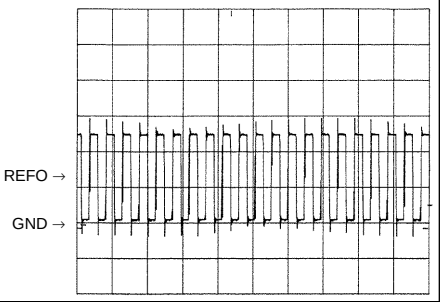
⑭ PLCK 2V/div. 0.5µs/div.

Normal mode: play



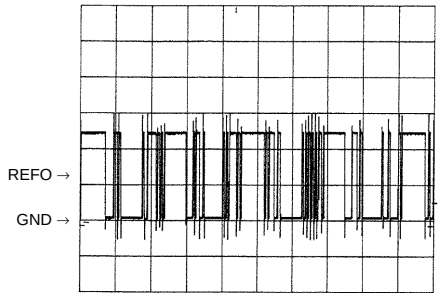
⑮ SCKO 2V/div. 1µs/div.

Normal mode: play



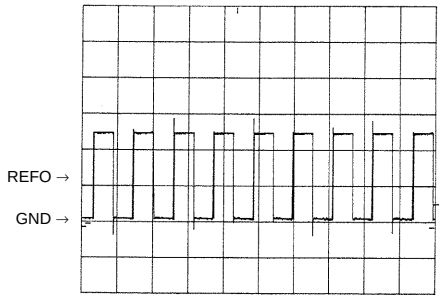
⑯ Dout 2V/div. 10µs/div.

Normal mode: play



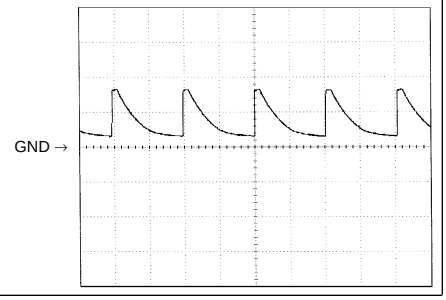
⑰ LRCK 2V/div. 20µs/div.

Normal mode: play

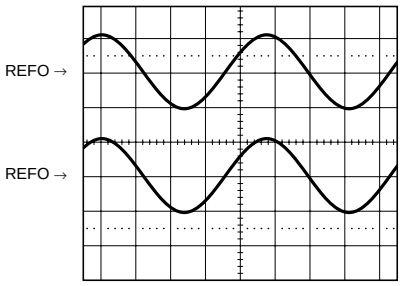


⑱ VD 5V/div. 50ms/div.

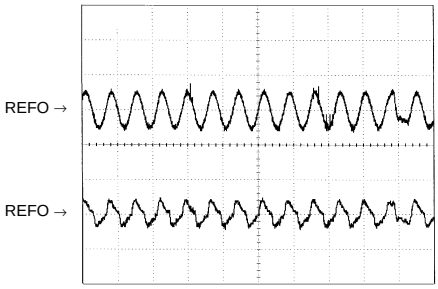
Normal mode: No disc



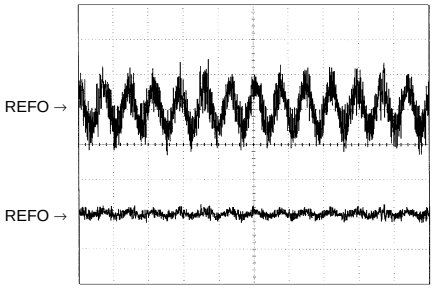
⑲ CH1: R OUT 1V/div. 0.2ms/div.
⑳ CH2: L OUT 1V/div.
Normal mode: Play (1kHz 0dB)



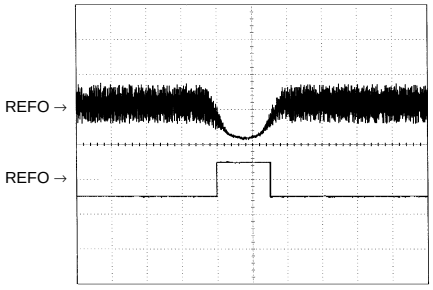
⑥ CH1: FE 0.2V/div. 1ms/div.
③ CH2: FD 0.5V/div.
Normal mode: During AGC



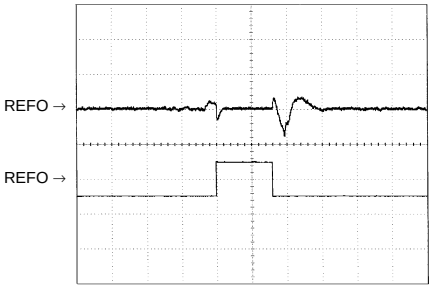
⑧ CH1: TE 0.2V/div. 1ms/div.
⑨ CH2: TD 0.5V/div.
Normal mode: During AGC



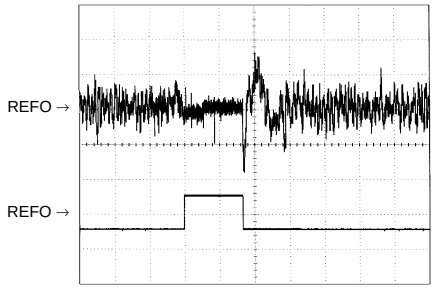
① CH1: RFI 1V/div. 0.5ms/div.
㉑ CH2: HOLD 5V/div.
Normal mode: The defect part passes 800µm(B.D)



③ CH1: FD 1V/div. 0.5ms/div.
㉑ CH2: HOLD 5V/div.
Normal mode: The defect part passes 800µm(B.D)



⑨ CH1: TD 0.1V/div. 0.5ms/div.
㉑ CH2: HOLD 5V/div.
Normal mode: The defect part passes 800µm(B.D)

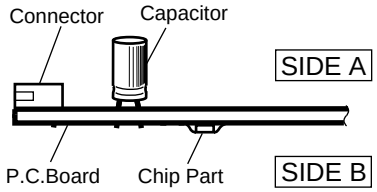


4. PCB CONNECTION DIAGRAM

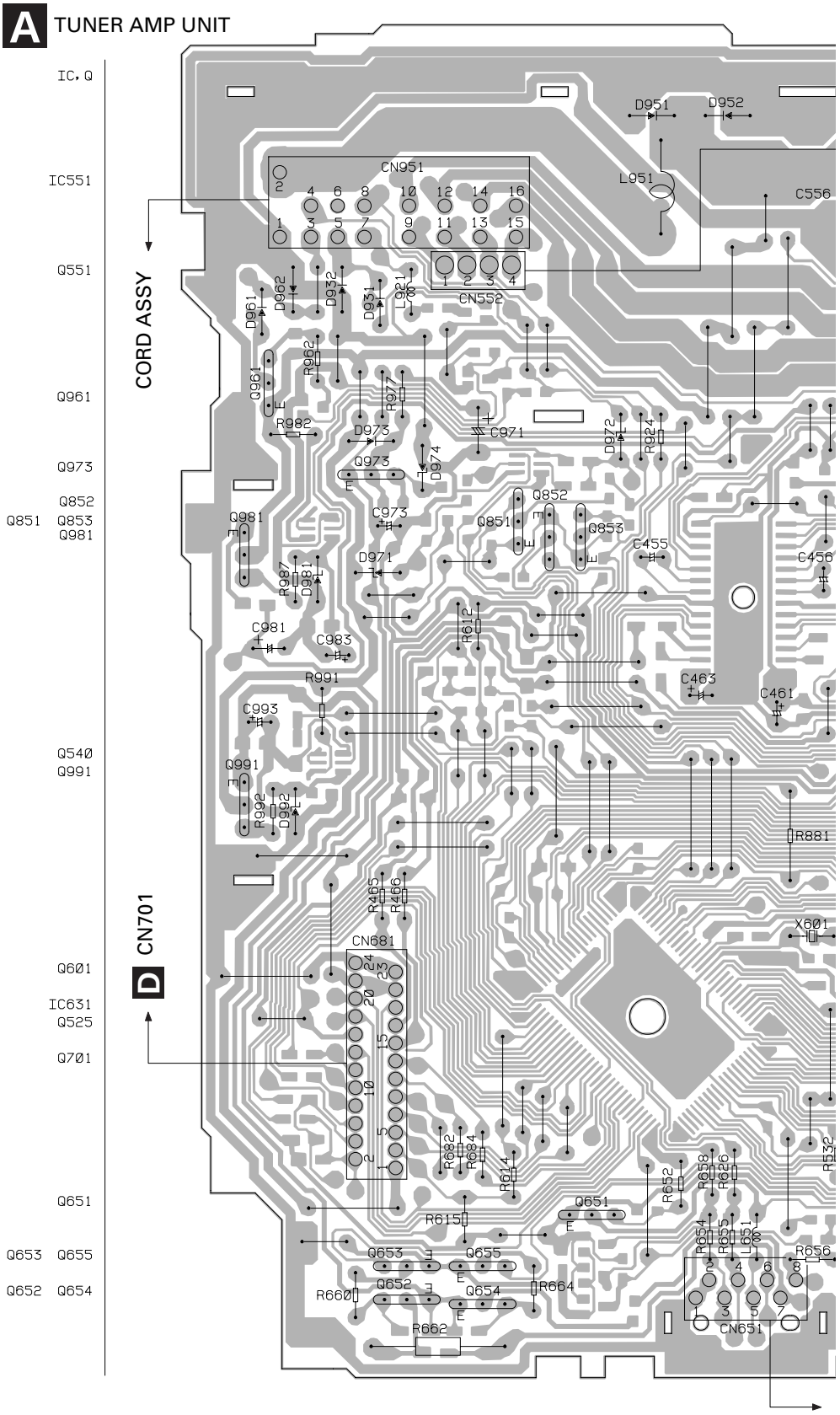
4.1 TUNER AMP UNIT

NOTE FOR PCB DIAGRAMS

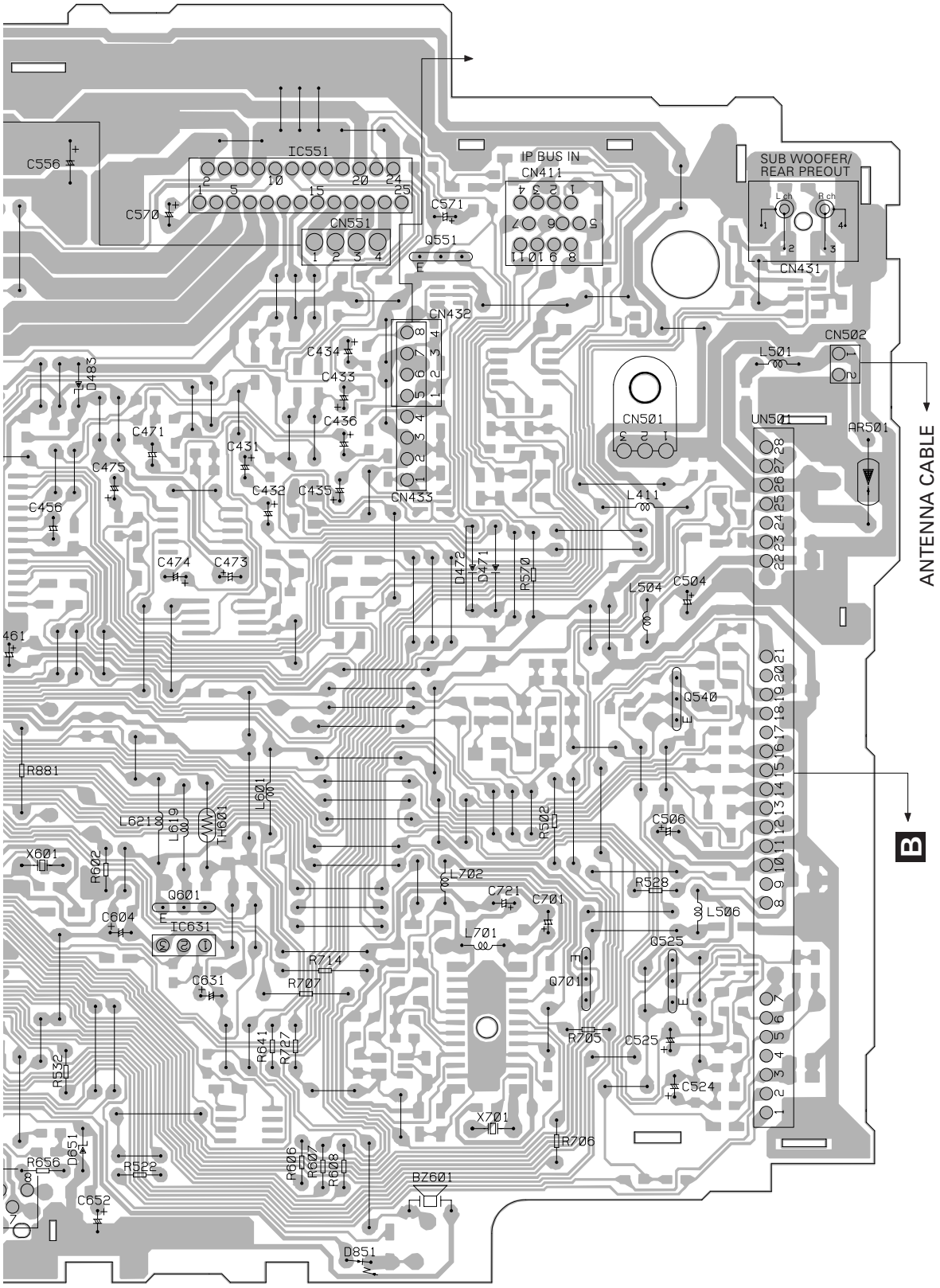
1. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.
2. Viewpoint of PCB diagrams



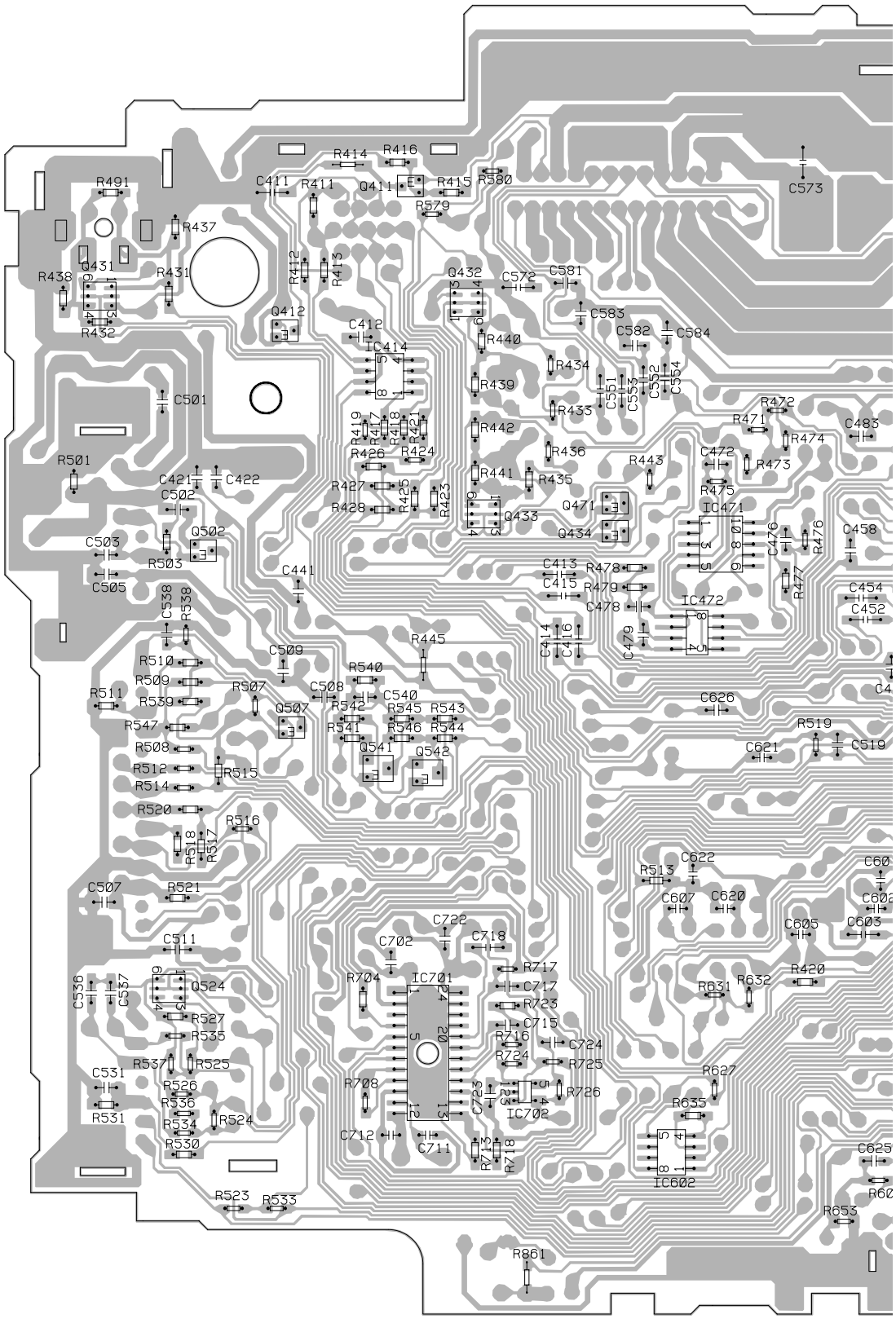
A TUNER AMP UNIT



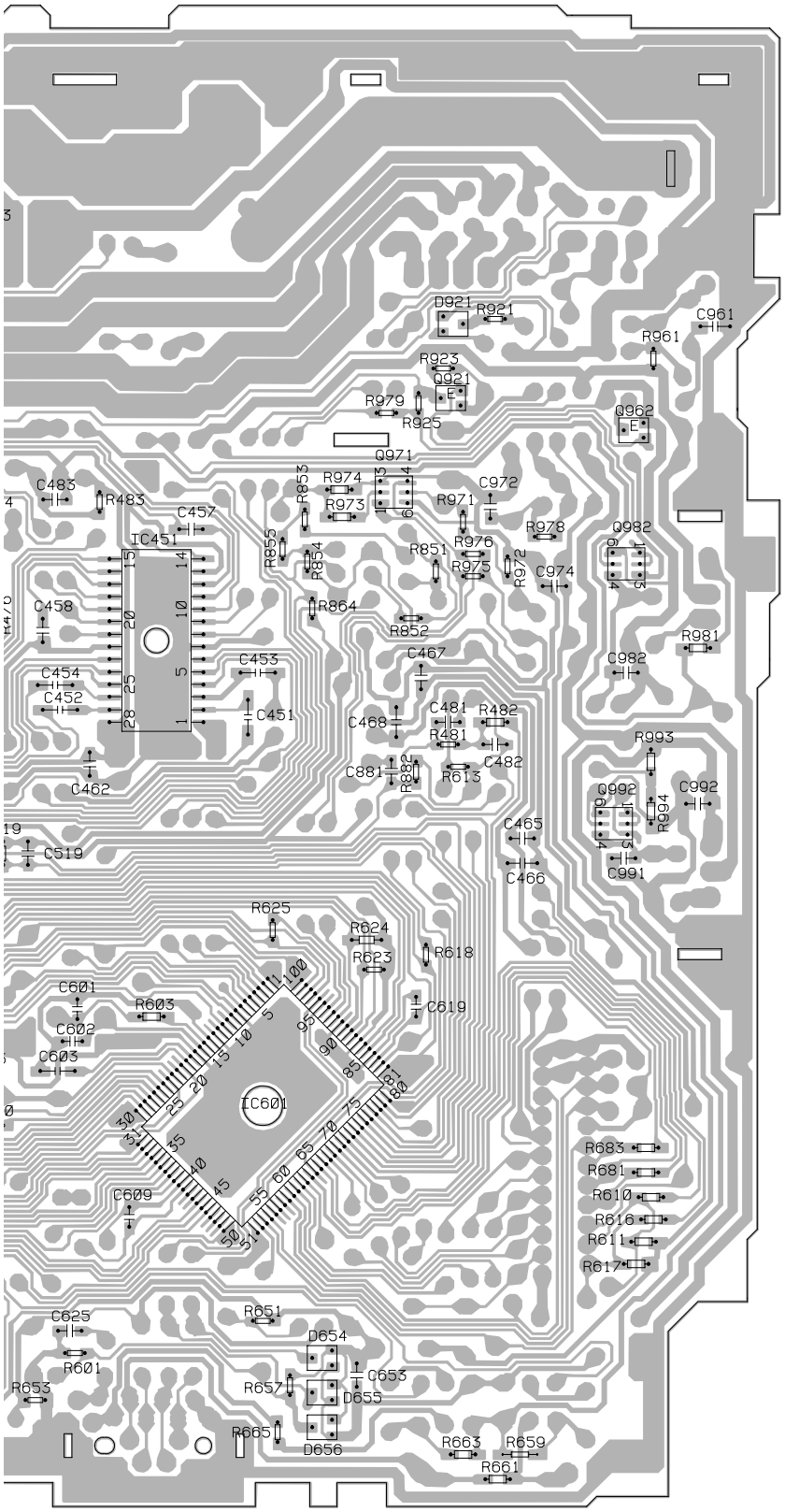
SIDE A


IC551
C556
C570
C571
CN551
Q551
IP BUS IN
CN411
SUB WOOFER/
REAR PREOUT
L ch
R ch
CN431
CN432
CN433
CN501
CN502
L501
UN501
AR501
ANTENNA CABLE
L411
L504
C504
Q540
C506
R528
L506
Q525
C525
C524
Q701
L701
L702
C721
C701
R714
R707
R705
R706
X701
BZ601
D851
R656
D651
R522
R532
R641
R727
R606
R607
R608
C652
C631
C604
IC631
Q601
X601
R602
R881
L621
L619
T-H601
L601
R502
C471
C475
C456
C474
C473
C483
C434
C433
C436
C431
C432
C435
D472
D471
R570
461
C
CN1801
B

A TUNER AMP UNIT



SIDE B



IC, Q

Q411

Q431
Q432

Q412
Q921
IC414
Q962

Q971

IC451 Q982

Q471 IC471
Q433
Q502 Q434

IC472

Q992
Q507

Q541 Q542

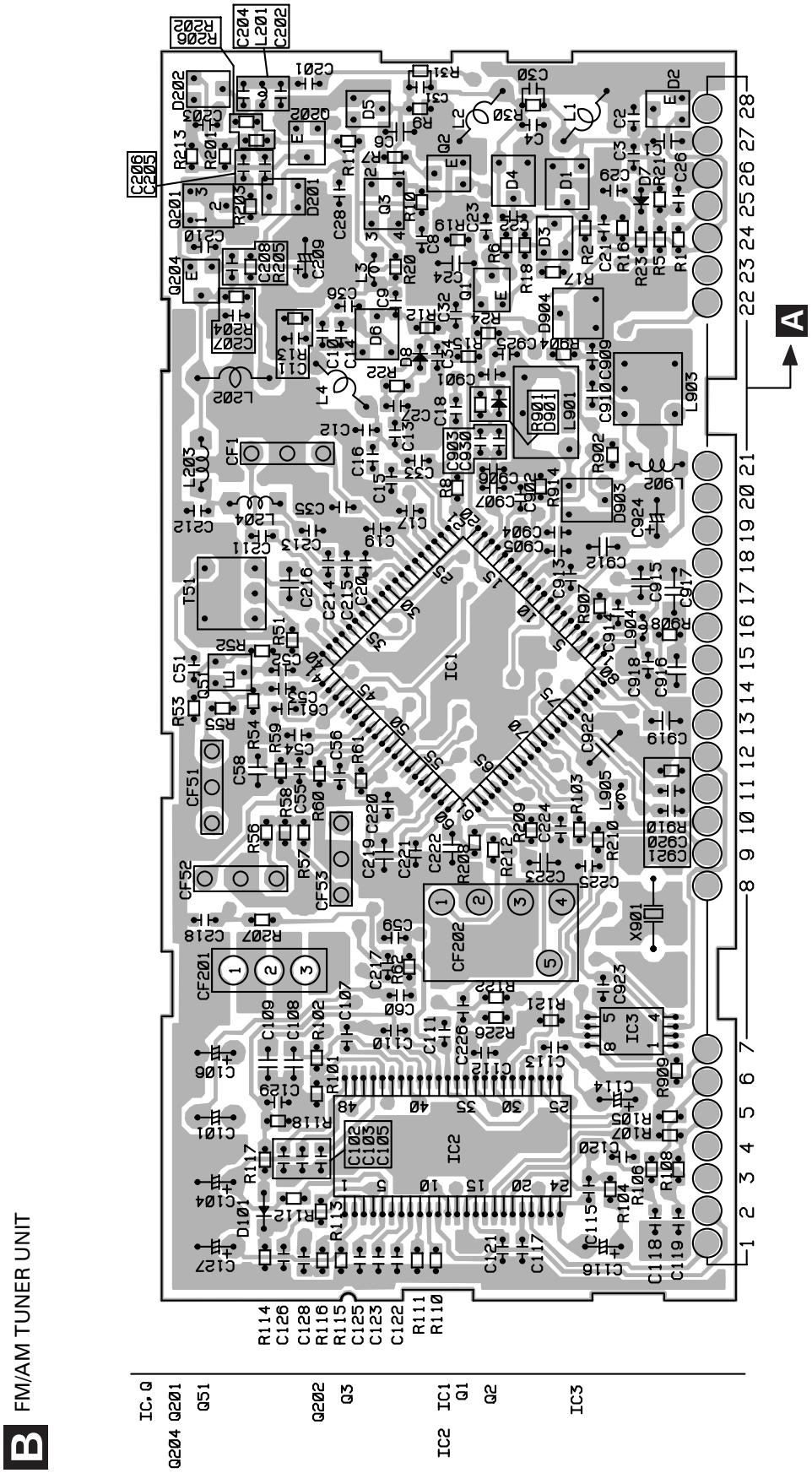
IC601
IC701
Q524

IC702

IC602

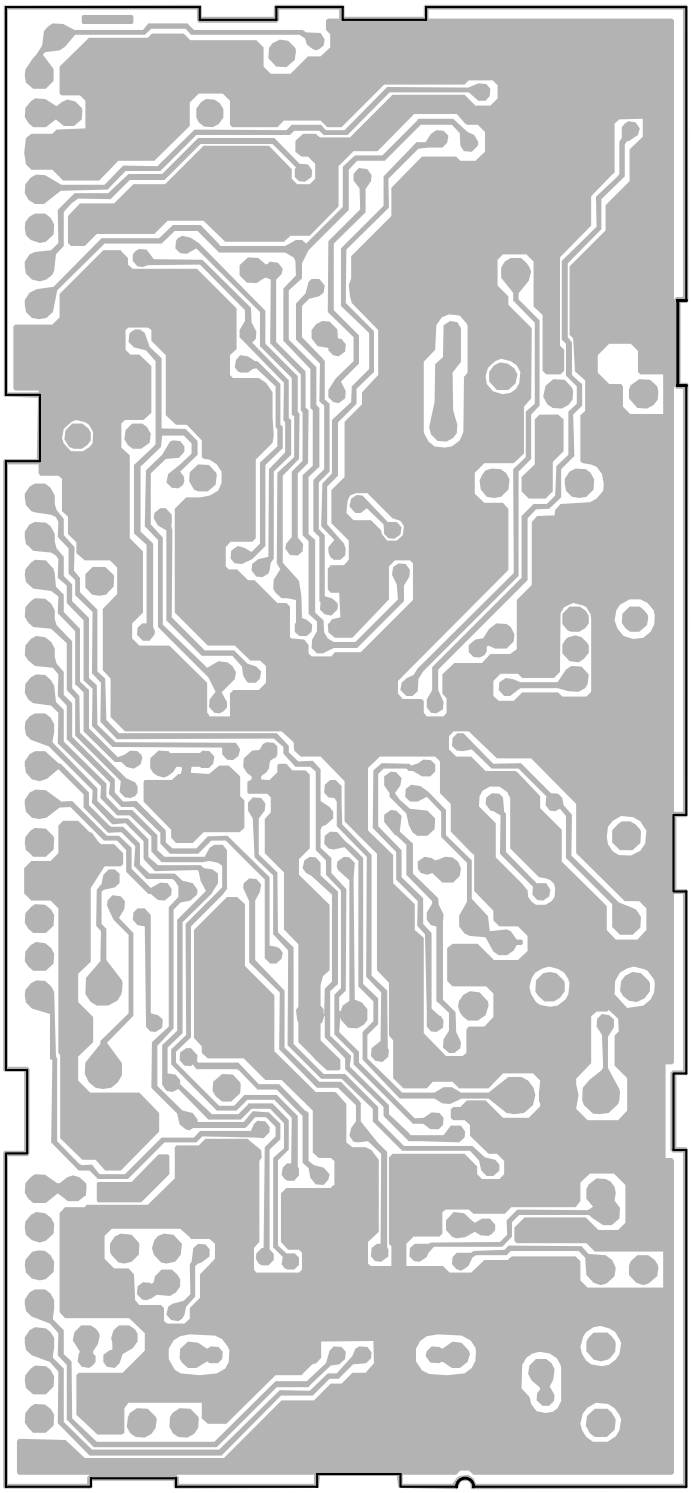
4.2 FM/AM TUNER UNIT

SIDE A



B FM/AM TUNER UNIT

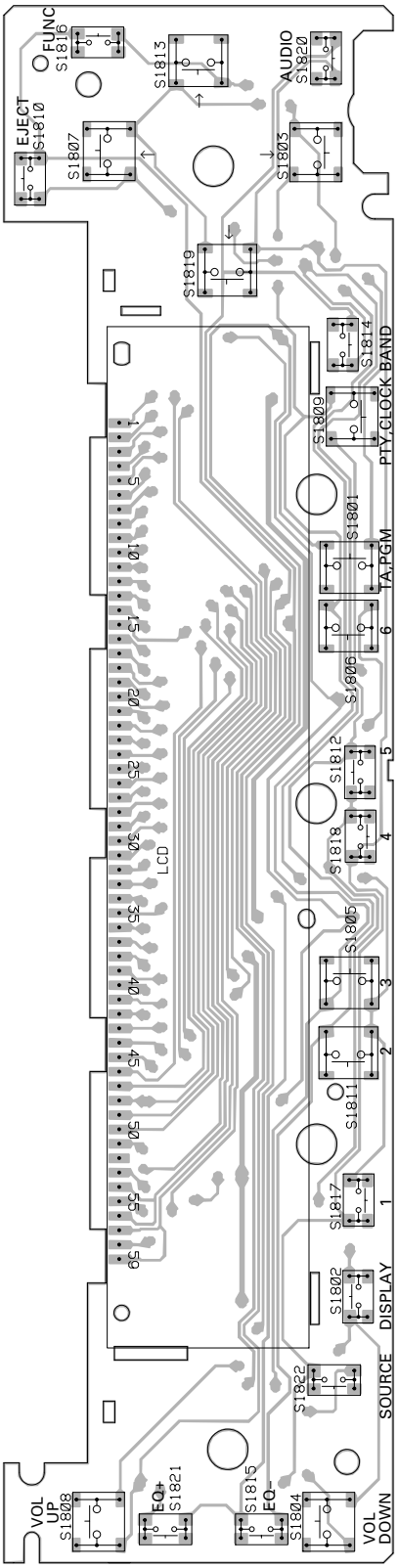
SIDE B



B FM/AM TUNER UNIT

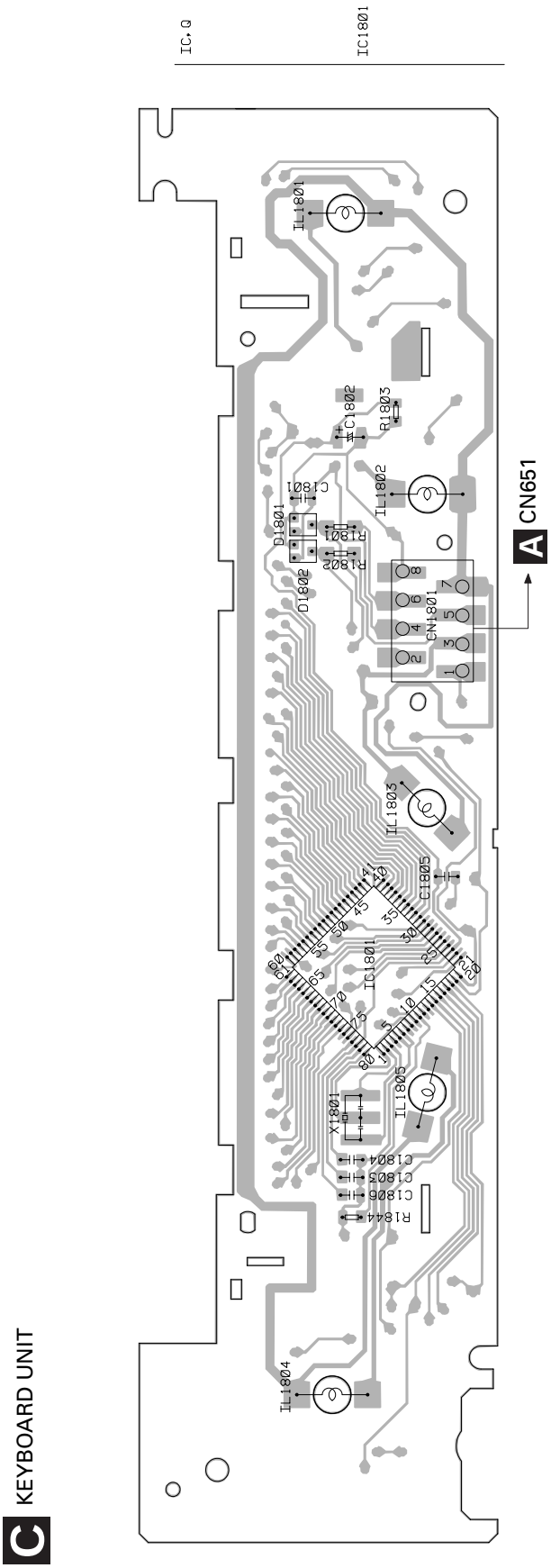
4.3 KEYBOARD UNIT

SIDE A



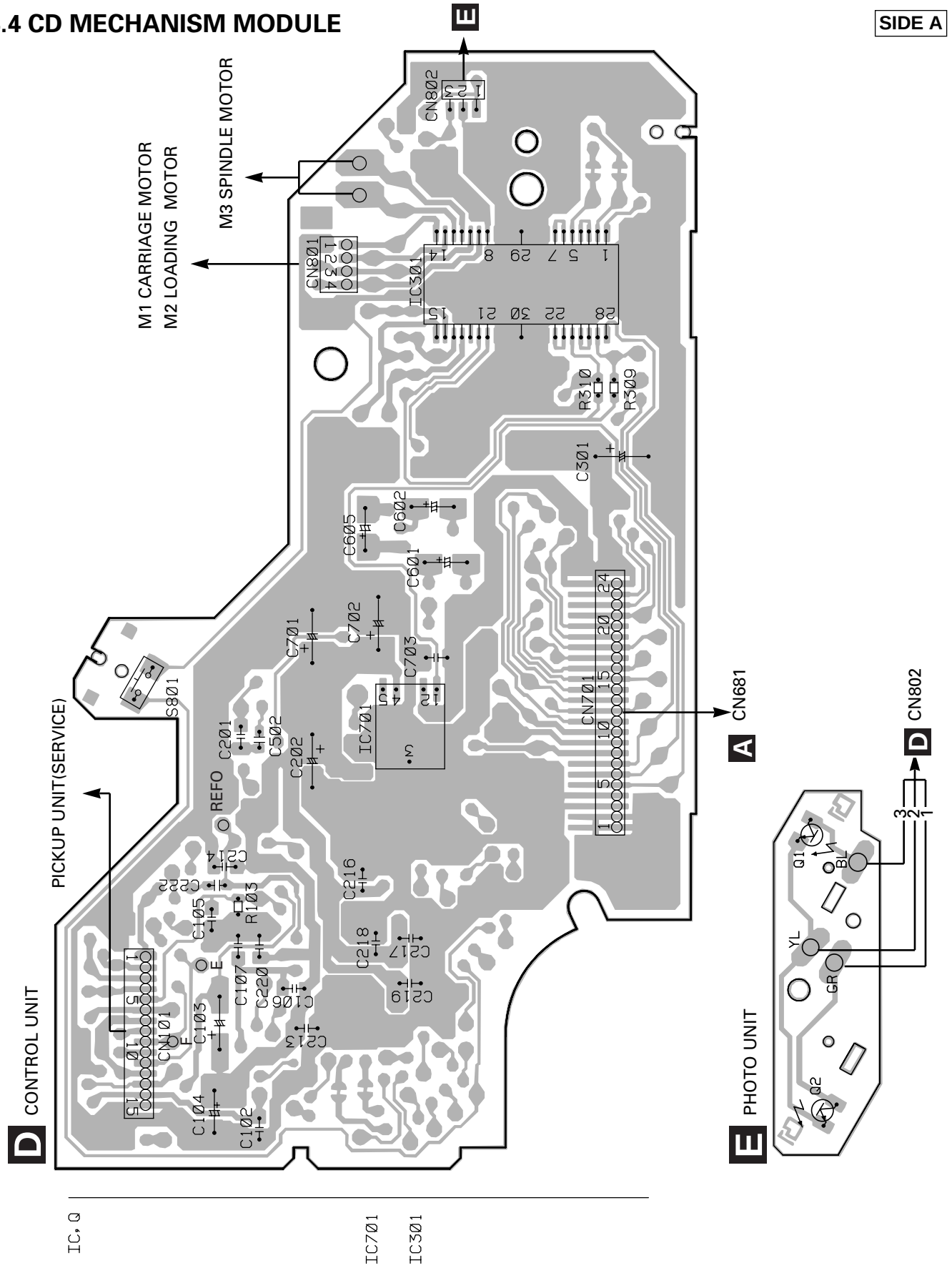
C KEYBOARD UNIT

C KEYBOARD UNIT

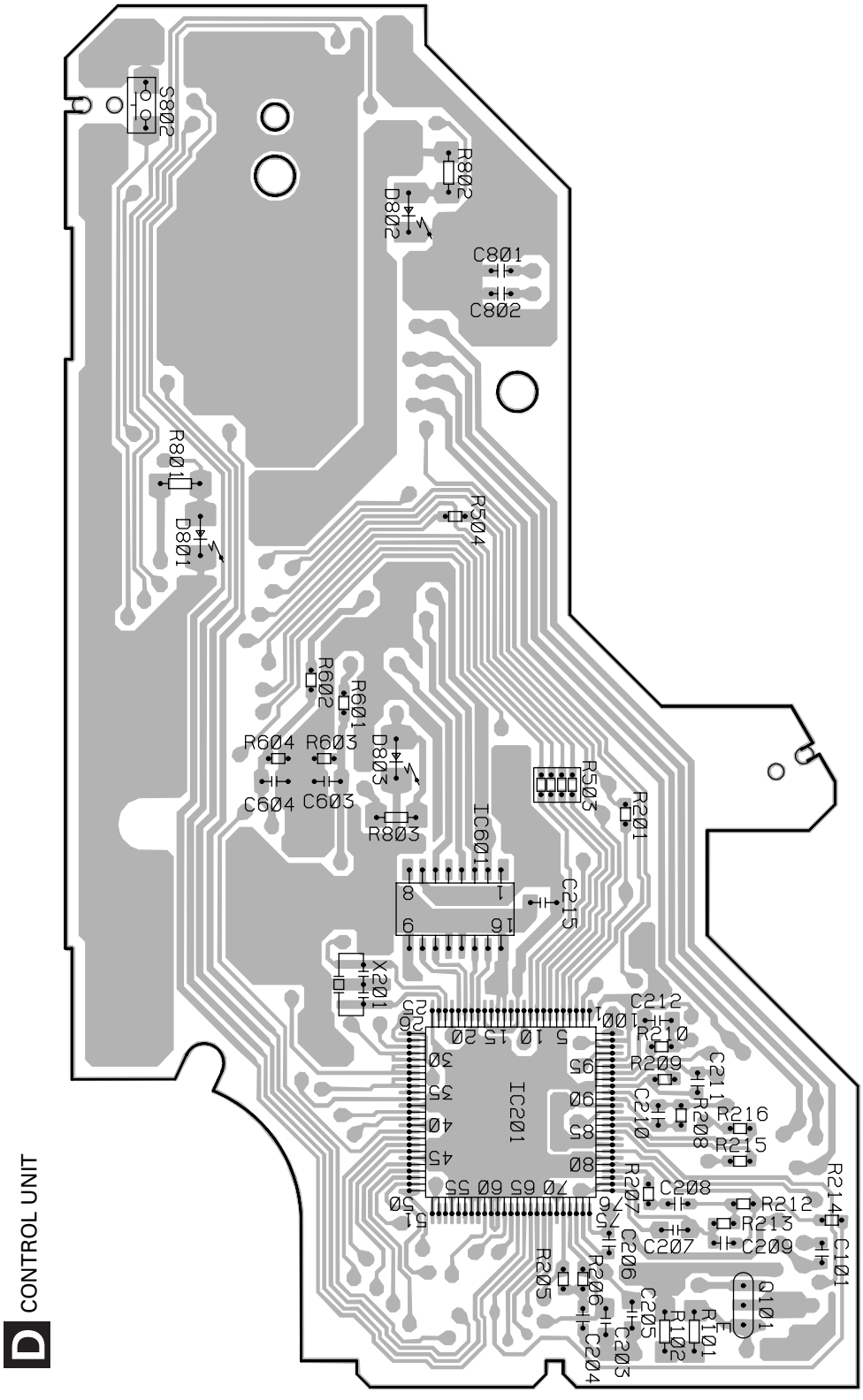


4.4 CD MECHANISM MODULE

SIDE A



SIDE B



D CONTROL UNIT

5. ELECTRICAL PARTS LIST

NOTES:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/○S○○○J,RS1/○○S○○○J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

A Unit Number : CWM6089(DEH-2000R/X1N/EW, DEH-2030R/X1N/EW)
Unit Name : Tuner Amp Unit

MISCELLANEOUS

=====Circuit Symbol and No.		===Part Name	Part No.
IC	451	IC	PML003AM
IC	551	IC	PAL005A
IC	601	IC	PE5025A
IC	631	IC	S-80734AN
IC	701	IC	PM4009A
Q	431	Transistor	IMH3A
Q	434	Transistor	DTA124EU
Q	502	Transistor	2SC4081
Q	507	Transistor	DTA124EU
Q	524	Transistor	IMH3A
Q	525	Transistor	DTA114ES
Q	540	Transistor	2SC1740S
Q	541	Transistor	2SD1757K
Q	542	Transistor	2SD1757K
Q	551	Transistor	DTC144ES
Q	601	Transistor	DTA114ES
Q	651	Transistor	2SA933S
Q	652	Transistor	2SB1236
Q	653	Transistor	DTC124ES
Q	701	Transistor	DTA124ES
Q	921	Transistor	2SA1576
Q	971	Transistor	IMX1
Q	973	Transistor	2SD1859
Q	981	Transistor	2SD2396
Q	982	Transistor	IMD2A
Q	991	Transistor	2SD2396
Q	992	Transistor	IMD2A
D	651	Diode	MTZ5R6J(C)
D	654	Diode Network	DA204U
D	655	Diode Network	DA204U
D	656	Diode Network	DA204U
D	921	Diode	DAN202U
D	931	Diode	1SR139-400
D	932	Diode	1SR139-400
D	951	Diode	1SR139-400
D	952	Diode	1SR139-400
D	971	Diode	HZS7L(C2)
D	972	Diode	HZS6L(C3)
D	973	Diode	1SR139-400
D	974	Diode	HZS6L(B1)
D	981	Diode	HZS9L(B3)
D	992	Diode	HZS9L(B1)
L	501	Ferri-Inductor	LAU4R7K
L	504	Ferri-Inductor	LAU2R2K
L	506	Inductor	LAU100K
L	601	Inductor	LAU100K
L	619	Ferri-Inductor	LAU2R2K
L	621	Ferri-Inductor	LAU2R2K
L	651	Ferri-Inductor	LAU101K
L	701	Ferri-Inductor	LAU101K
L	702	Inductor	LAU100K
L	921	Ferri-Inductor	LAU2R2K
L	951	Choke Coil 600µH	CTH1221
TH	601	Thermistor	CCX1031
X	601	Radiator 12.58291MHz	CSS1402
X	701	Crystal Resonator 3.648MHz	CSS1447
		FM/AM Tuner Unit	CWE1500
BZ	601	Buzzer	CPV1050
AR	501		DSP-201M

RESISTORS

R	421		RS1/10S473J
R	431		RS1/10S821J
R	432		RS1/10S821J
R	437		RS1/10S223J
R	438		RS1/10S223J
R	443		RS1/10S0R0J
R	445		RS1/8S473J
R	465		RD1/4PU221J
R	466		RD1/4PU221J
R	502		RD1/4PU222J
R	503		RS1/10S222J
R	508		RS1/10S681J
R	509		RS1/10S473J
R	510		RS1/10S681J
R	511		RS1/10S473J
R	512		RS1/10S681J
R	513		RS1/8S473J
R	514		RS1/10S681J
R	515		RS1/8S473J
R	516		RS1/10S681J
R	517		RS1/8S472J
R	518		RS1/10S103J
R	519		RS1/10S393J
R	520		RS1/10S681J
R	521		RS1/10S473J
R	522		RD1/4PU681J
R	523		RS1/10S473J
R	526		RS1/10S104J
R	527		RS1/10S104J
R	528		RD1/4PU102J
R	530		RS1/10S681J
R	531		RS1/10S473J
R	532		RD1/4PU681J
R	533		RS1/10S473J
R	534		RS1/10S162J
R	535		RS1/10S162J
R	536		RS1/10S272J
R	537		RS1/10S272J
R	540		RS1/10S224J
R	541		RS1/10S224J
R	542		RS1/10S224J
R	543		RS1/10S222J
R	544		RS1/10S222J
R	545		RS1/10S223J
R	546		RS1/10S223J

Circuit Symbol and No.		Part Name	Part No.
R	547		RS1/10S472J
R	570		RD1/4PU103J
R	579		RS1/10S331J
R	580		RS1/10S103J
R	602		RD1/4PU473J
R	603		RS1/10S102J
R	606		RD1/4PU102J
R	607		RD1/4PU102J
R	608		RD1/4PU102J
R	610		RS1/10S222J
R	611		RS1/10S473J
R	613		RS1/10S0R0J
R	614		RD1/4PU222J
R	615		RD1/4PU473J
R	616		RS1/10S222J
R	617		RS1/10S473J
R	618		RN1/10SE2002D
R	625		RS1/10S0R0J
R	626		RD1/4PU102J
R	627		RS1/10S473J
R	631		RS1/10S102J
R	632		RS1/10S822J
R	641		RD1/4PU102J
R	651		RS1/10S222J
R	652		RD1/4PU472J
R	653		RS1/10S222J
R	654		RD1/4PU222J
R	655		RD1/4PU222J
R	656		RD1/4PU222J
R	657		RS1/10S473J
R	658		RD1/4PU472J
R	659		RS1/8S472J
R	660		RD1/4PU302J
R	661		RS1/10S1R0J
R	681		RS1/10S681J
R	682		RD1/4PU102J
R	683		RS1/10S102J
R	684		RD1/4PU102J
R	704		RS1/10S102J
R	705		RD1/4PU102J
R	706		RD1/4PU102J
R	713		RS1/10S0R0J
R	714		RD1/4PU102J
R	716		RS1/10S0R0J
R	717		RS1/10S225J
R	718		RS1/10S0R0J
R	727		RD1/4PU681J
R	921		RS1/10S153J
R	923		RS1/10S472J
R	924		RD1/4PU102J
R	925		RS1/10S473J
R	971		RS1/10S103J
R	972		RS1/10S473J
R	973		RS1/10S103J
R	974		RS1/10S473J
R	975		RS1/10S473J
R	976		RS1/10S473J
R	977		RD1/4PU101J
R	978		RS1/10S472J
R	979		RS1/10S472J
R	981		RS1/10S1R0J
R	982		RD1/4PU511J
R	987		RD1/4PU221J
R	991		RD1/4PU221J
R	992		RD1/4PU221J
R	993		RS1/10S472J
R	994		RS1/10S222J

CAPACITORS

Circuit Symbol and No.		Part Name	Part No.
C	431		CEJA4R7M35
C	432		CEAL4R7M35
C	451		CKSYB224K25
C	452		CKSYB224K25
C	453		CKSYB105K16
C	454		CKSYB105K16
C	455		CEJANP4R7M16
C	456		CEJANP4R7M16
C	457		CKSQYB153K50
C	458		CKSQYB153K50
C	461		CEAL470M10
C	462		CKSQYB104K25
C	463		CEJA100M16
C	465		CCSQSL182J50
C	466		CCSSL182J50
C	501		CKSQYB103K50
C	502		CKSQYB223K50
C	503		CKSQYB223K50
C	504		CEJA220M10
C	505		CKSQYB102K50
C	506		CEAL101M10
C	507		CKSQYB473K25
C	508		CCSQCH101J50
C	509		CKSQYB102K50
C	519		CKSQYB472K50
C	524		CEJA1R0M50
C	525		CEJA1R0M50
C	531		CKSQYB182K50
C	536		CKSQYB123K50
C	537		CKSQYB123K50
C	540		CKSQYB223K50
C	551		CKSYB224K25
C	552		CKSYB224K25
C	553		CKSYB224K25
C	554		CKSYB224K25
C	556	4700µF/16V	CCH1328
C	570		CEJA100M16
C	571		CEJA330M10
C	572		CKSYB105K16
C	573		CKSYB104K50
C	601		CCSQCH200J50
C	602		CCSQCH200J50
C	603		CKSYB105K16
C	604		CEJA4R7M35
C	605		CCSQCH101J50
C	607		CCSQCH101J50
C	609		CCSQCH101J50
C	619		CCSQCH101J50
C	621		CCSQCH101J50
C	622		CCSQCH101J50
C	631		CEJA2R2M50
C	652		CEJA4R7M35
C	653		CKSQYB473K25
C	701		CEAL220M6R3
C	702		CKSQYB104K25
C	711		CCSQCH270J50
C	712		CCSQCH270J50
C	715		CKSQYB104K50
C	717		CKSQYB471K50
C	718		CKSYB471K50
C	721		CEAL220M6R3
C	722		CKSQYB104K25
C	971	470µF/16V	CCH1331
C	972		CKSQYB473K25
C	973		CEJA101M10

Circuit Symbol and No.		Part Name	Part No.
C	974		CKSQYB473K25
C	981	330µF/16V	CCH1326
C	982		CKSQYB103K50
C	983		CEJA101M16
C	991		CKSQYB473K25
C	992		CKSQYB102K50
C	993		CEJA101M10

A Unit Number : CWM6087(DEH-2020R/X1N/GR)
Unit Name : Tuner Amp Unit

MISCELLANEOUS

IC	451	IC	PML003AM
IC	551	IC	PAL005A
IC	601	IC	PE5025A
IC	631	IC	S-80734AN
IC	701	IC	PM4009A
Q	431	Transistor	IMH3A
Q	434	Transistor	DTA124EU
Q	502	Transistor	2SC4081
Q	507	Transistor	DTA124EU
Q	524	Transistor	IMH3A
Q	525	Transistor	DTA114ES
Q	540	Transistor	2SC1740S
Q	541	Transistor	2SD1757K
Q	542	Transistor	2SD1757K
Q	551	Transistor	DTC144ES
Q	601	Transistor	DTA114ES
Q	651	Transistor	2SA933S
Q	652	Transistor	2SB1236
Q	653	Transistor	DTC124ES
Q	701	Transistor	DTA124ES
Q	921	Transistor	2SA1576
Q	971	Transistor	IMX1
Q	973	Transistor	2SD1859
Q	981	Transistor	2SD2396
Q	982	Transistor	IMD2A
Q	991	Transistor	2SD2396
Q	992	Transistor	IMD2A
D	651	Diode	MTZ5R6J(C)
D	654	Diode Network	DA204U
D	655	Diode Network	DA204U
D	656	Diode Network	DA204U
D	921	Diode	DAN202U
D	931	Diode	1SR139-400
D	932	Diode	1SR139-400
D	951	Diode	1SR139-400
D	952	Diode	1SR139-400
D	971	Diode	HZS7L(C2)
D	972	Diode	HZS6L(C3)
D	973	Diode	1SR139-400
D	974	Diode	HZS6L(B1)
D	981	Diode	HZS9L(B3)
D	992	Diode	HZS9L(B1)
L	504	Ferri-Inductor	LAU2R2K
L	506	Inductor	LAU100K
L	601	Inductor	LAU100K
L	619	Ferri-Inductor	LAU2R2K
L	621	Ferri-Inductor	LAU2R2K
L	651	Ferri-Inductor	LAU101K
L	701	Ferri-Inductor	LAU101K
L	702	Inductor	LAU100K
L	921	Ferri-Inductor	LAU2R2K
L	951	Choke Coil	CTH1221
TH	601	Thermistor	CCX1031
X	601	Radiator 12.58291MHz	CSS1402
X	701	Crystal Resonator 3.648MHz	CSS1447
		FM/AM Tuner Unit	CWE1503

Circuit Symbol and No.		Part Name	Part No.
BZ	601	Buzzer	CPV1050
AR	501		DSP-201M

RESISTORS

R	421		RS1/10S473J
R	431		RS1/10S821J
R	432		RS1/10S821J
R	437		RS1/10S223J
R	438		RS1/10S223J
R	443		RS1/10S0R0J
R	445		RS1/8S473J
R	465		RD1/4PU221J
R	466		RD1/4PU221J
R	502		RD1/4PU222J
R	503		RS1/10S222J
R	508		RS1/10S681J
R	509		RS1/10S473J
R	510		RS1/10S681J
R	511		RS1/10S473J
R	512		RS1/10S681J
R	513		RS1/8S473J
R	514		RS1/10S681J
R	515		RS1/8S473J
R	516		RS1/10S681J
R	517		RS1/8S472J
R	518		RS1/10S103J
R	519		RS1/10S393J
R	520		RS1/10S681J
R	521		RS1/10S473J
R	522		RD1/4PU681J
R	523		RS1/10S473J
R	526		RS1/10S104J
R	527		RS1/10S104J
R	528		RD1/4PU102J
R	530		RS1/10S681J
R	531		RS1/10S473J
R	532		RD1/4PU681J
R	533		RS1/10S473J
R	534		RS1/10S162J
R	535		RS1/10S162J
R	536		RS1/10S272J
R	537		RS1/10S272J
R	540		RS1/10S224J
R	541		RS1/10S224J
R	542		RS1/10S224J
R	543		RS1/10S222J
R	544		RS1/10S222J
R	545		RS1/10S223J
R	546		RS1/10S223J
R	547		RS1/10S472J
R	570		RD1/4PU103J
R	579		RS1/10S331J
R	580		RS1/10S103J
R	602		RD1/4PU473J
R	603		RS1/10S102J
R	606		RD1/4PU102J
R	607		RD1/4PU102J
R	608		RD1/4PU102J
R	610		RS1/10S222J
R	611		RS1/10S473J
R	612		RD1/4PU473J
R	614		RD1/4PU222J
R	615		RD1/4PU473J
R	616		RS1/10S222J
R	617		RS1/10S473J
R	618		RN1/10SE2002D
R	625		RS1/10S0R0J
R	626		RD1/4PU102J
R	627		RS1/10S473J

=====Circuit Symbol and No.		===Part Name	Part No.
R	631		RS1/10S102J
R	632		RS1/10S822J
R	641		RD1/4PU102J
R	651		RS1/10S222J
R	652		RD1/4PU472J
R	653		RS1/10S222J
R	654		RD1/4PU222J
R	655		RD1/4PU222J
R	656		RD1/4PU222J
R	657		RS1/10S473J
R	658		RD1/4PU472J
R	659		RS1/8S472J
R	660		RD1/4PU302J
R	661		RS1/10S1R0J
R	681		RS1/10S681J
R	682		RD1/4PU102J
R	683		RS1/10S102J
R	684		RD1/4PU102J
R	704		RS1/10S102J
R	705		RD1/4PU102J
R	706		RD1/4PU102J
R	713		RS1/10S0R0J
R	714		RD1/4PU102J
R	716		RS1/10S0R0J
R	717		RS1/10S225J
R	718		RS1/10S0R0J
R	727		RD1/4PU681J
R	921		RS1/10S153J
R	923		RS1/10S472J
R	924		RD1/4PU102J
R	925		RS1/10S473J
R	971		RS1/10S103J
R	972		RS1/10S473J
R	973		RS1/10S103J
R	974		RS1/10S473J
R	975		RS1/10S473J
R	976		RS1/10S473J
R	977		RD1/4PU101J
R	978		RS1/10S472J
R	979		RS1/10S472J
R	981		RS1/10S1R0J
R	982		RD1/4PU511J
R	987		RD1/4PU221J
R	991		RD1/4PU221J
R	992		RD1/4PU221J
R	993		RS1/10S472J
R	994		RS1/10S222J

CAPACITORS

C	431		CEJA4R7M35
C	432		CEAL4R7M35
C	451		CKSYB224K25
C	452		CKSYB224K25
C	453		CKSYB105K16
C	454		CKSYB105K16
C	455		CEJANP4R7M16
C	456		CEJANP4R7M16
C	457		CKSQYB153K50
C	458		CKSQYB153K50
C	461		CEAL470M10
C	462		CKSQYB104K25
C	463		CEJA100M16
C	465		CCSQSL182J50
C	466		CCSSL182J50
C	502		CKSQYB223K50
C	503		CKSQYB223K50
C	504		CEJA220M10
C	505		CKSQYB102K50
C	506		CEAL101M10

=====Circuit Symbol and No.		===Part Name	Part No.
C	507		CKSQYB473K25
C	508		CCSQCH101J50
C	509		CKSQYB102K50
C	519		CKSQYB472K50
C	524		CEJA1R0M50
C	525		CEJA1R0M50
C	531		CKSQYB182K50
C	536		CKSQYB123K50
C	537		CKSQYB123K50
C	540		CKSQYB223K50
C	551		CKSYB224K25
C	552		CKSYB224K25
C	553		CKSYB224K25
C	554		CKSYB224K25
C	556	4700µF/16V	CCH1328
C	570		CEJA100M16
C	571		CEJA330M10
C	572		CKSYB105K16
C	573		CKSYB104K50
C	601		CCSQCH200J50
C	602		CCSQCH200J50
C	603		CKSYB105K16
C	604		CEJA4R7M35
C	605		CCSQCH101J50
C	607		CCSQCH101J50
C	609		CCSQCH101J50
C	619		CCSQCH101J50
C	621		CCSQCH101J50
C	622		CCSQCH101J50
C	631		CEJA2R2M50
C	652		CEJA4R7M35
C	653		CKSQYB473K25
C	701		CEAL220M6R3
C	702		CKSQYB104K25
C	711		CCSQCH270J50
C	712		CCSQCH270J50
C	715		CKSQYB104K50
C	717		CKSQYB471K50
C	718		CKSYB471K50
C	721		CEAL220M6R3
C	722		CKSQYB104K25
C	971	470µF/16V	CCH1331
C	972		CKSQYB473K25
C	973		CEJA101M10
C	974		CKSQYB473K25
C	981	330µF/16V	CCH1326
C	982		CKSQYB103K50
C	983		CEJA101M16
C	991		CKSQYB473K25
C	992		CKSQYB102K50
C	993		CEJA101M10

B Unit Number : CWE1503(DEH-2020R/X1N/GR)
Unit Name : FM/AM Tuner Unit

MISCELLANEOUS

IC	1	IC	PML002A
IC	2	IC	PM4008A
IC	3	IC	BR9010FV
Q	1	Transistor	2SC4081
Q	2	Transistor	DTC124EU
Q	3	FET	3SK263
Q	51	Transistor	2SC4081
D	1	Diode	KV1410(23)
D	2	Diode	1SV248
D	4	Diode	KV1410(23)

Circuit Symbol and No.		Part Name	Part No.
D	6	Diode	KV1410(23)
D	101	Diode	MA110
D	903	Diode	KV1410(23)
L	1	Coil	CTC1155
L	2	Coil	CTC1155
L	3	Inductor	LCTB100K2125
L	4	Coil	CTC1155
L	901	Coil	CTC1154
L	904	Inductor	LCTBR47K1608
L	905	Inductor	LCTBR47K1608
T	51	Coil	CTE1132
CF	51	Ceramic Filter	CTF1442
CF	52	Ceramic Filter	CTF1442
CF	53	Ceramic Filter	CTF1442
X	901	Crystal Resonator 10.250MHz	CSS1432
RESISTORS			
R	1		RS1/16S153J
R	2		RS1/16S103J
R	6		RS1/16S103J
R	7		RS1/16S273J
R	8		RS1/16S473J
R	9		RS1/16S223J
R	10		RS1/16S473J
R	11		RS1/16S221J
R	12		RS1/16S103J
R	13		RS1/16S104J
R	16		RS1/16S223J
R	17		RS1/16S221J
R	18		RS1/16S221J
R	19		RS1/16S473J
R	20		RS1/16S470J
R	51		RS1/16S470J
R	52		RS1/16S103J
R	53		RS1/16S103J
R	54		RS1/16S331J
R	55		RS1/16S331J
R	56		RS1/16S560J
R	57		RS1/16S560J
R	58		RS1/16S102J
R	59		RS1/16S225J
R	60		RS1/16S133J
R	61		RS1/16S433J
R	62		RS1/16S562J
R	101		RS1/16S333J
R	102		RS1/16S103J
R	103		RS1/16S333J
R	104		RS1/16S562J
R	106		RS1/16S0R0J
R	108		RS1/16S0R0J
R	110		RS1/16S154J
R	111		RS1/16S273J
R	112		RS1/16S223J
R	113		RS1/16S222J
R	114		RS1/16S333J
R	115		RS1/16S334J
R	116		RS1/16S473J
R	117		RS1/16S333J
R	118		RS1/16S223J
R	122		RS1/16S0R0J
R	902		RS1/16S103J
R	907		RS1/16S103J
R	909		RS1/16S473J
R	914		RS1/16S562J

Circuit Symbol and No.		Part Name	Part No.
CAPACITORS			
C	1		CCSQCH5R0C50
C	2		CCSRCH5R0C50
C	4		CCSRCJ3R0C50
C	6		CKSQYB105K10
C	8		CKSRYB222K50
C	10		CCSRCH220J50
C	11		CCSRCH150J50
C	12		CCSRCH8R0D50
C	14		CCSRCJ3R0C50
C	15		CKSRYB103K50
C	16		CKSRYB222K50
C	17		CKSRYB222K50
C	18		CCSRCJ3R0C50
C	19		CKSRYB103K50
C	20		CKSRYB103K50
C	21		CKSRYB103K50
C	24		CKSQYB334K16
C	31		CKSRYB222K50
C	32		CCSRCH470J50
C	35		CKSRYB103K50
C	51		CKSRYB103K50
C	52		CKSRYB473K16
C	53		CCSRCK2R0C50
C	54		CKSRYB103K50
C	55		CKSRYB104K16
C	56		CKSRYB104K16
C	58		CKSQYB224K16
C	59		CKSRYB223K25
C	60		CKSRYB104K16
C	101		CEALNP100M10
C	102		CCSRCH151J50
C	103		CKSRYB473K16
C	105		CKSRYB682K25
C	106		CEAL2R2M50
C	107		CKSRYB103K50
C	108		CKSQYB474K16
C	109		CKSQYB474K16
C	110		CKSRYB104K16
C	111		CKSRYB104K16
C	112		CKSRYB104K16
C	113		CKSRYB123K25
C	114		CEAL220M6R3
C	115		CKSRYB473K16
C	116		CEAL2R2M50
C	117		CKSRYB102K50
C	120		CKSRYB153K25
C	121		CKSRYB332K50
C	122		CKSRYB682K25
C	123		CKSRYB681K50
C	125		CKSRYB103K50
C	126		CKSRYB103K50
C	127		CEAL2R2M50
C	128		CKSRYB103K50
C	220		CKSRYB104K16
C	902		CCSRCH270J50
C	904		CKSRYB223K25
C	905		CKSRYB103K50
C	906		CCSRTH100D50
C	907		CCSRTH150J50
C	913		CKSRYB223K25
C	914		CKSRYB682K25
C	915		CKSQYB223K25
C	918		CKSRYB223K25
C	919		CKSQYB225K10
C	920		CCSRCH270J50

Circuit Symbol and No.		Part Name	Part No.
C	921		CCSRCH270J50
C	922		CKSYB105K16
C	923		CKSRYB103K50

B

Unit Number : CWE1500(DEH-2000R/X1N/EW, DEH-2030R/X1N/EW)
Unit Name : FM/AM Tuner Unit

MISCELLANEOUS

IC	1	IC	PML002A
IC	2	IC	PM4008A
IC	3	IC	BR9010FV
Q	1	Transistor	2SC4081
Q	2	Transistor	DTC124EU
Q	3	FET	3SK263
Q	51	Transistor	2SC4081
Q	201	FET	2SK932
Q	202	Transistor	DTC124EU
Q	204	Transistor	2SC4081
D	1	Diode	KV1410(23)
D	2	Diode	1SV248
D	4	Diode	KV1410(23)
D	6	Diode	KV1410(23)
D	101	Diode	MA110
D	201	Diode	MA143
D	202	Diode	MA147
D	903	Diode	KV1410(23)
D	904	Diode	SVC253
L	1	Coil	CTC1155
L	2	Coil	CTC1155
L	3	Inductor	LCTB100K2125
L	4	Coil	CTC1155
L	201	Inductor	LCTB330K1608
L	202	Inductor	CTF1287
L	203	Inductor	LCTA121J3225
L	901	Coil	CTC1154
L	902	Inductor	LCTA3R3J3225
L	904	Inductor	LCTBR47K1608
L	905	Inductor	LCTBR47K1608
T	51	Coil	CTE1132
CF	51	Ceramic Filter	CTF1442
CF	52	Ceramic Filter	CTF1442
CF	53	Ceramic Filter	CTF1442
CF	202	Ceramic Filter	CTF1348
X	901	Crystal Resonator 10.250MHz	CSS1432

RESISTORS

R	1	RS1/16S153J
R	2	RS1/16S103J
R	6	RS1/16S103J
R	7	RS1/16S273J
R	8	RS1/16S473J
R	9	RS1/16S223J
R	10	RS1/16S473J
R	11	RS1/16S221J
R	12	RS1/16S103J
R	13	RS1/16S104J
R	16	RS1/16S223J
R	17	RS1/16S221J
R	18	RS1/16S221J
R	19	RS1/16S473J
R	20	RS1/16S470J
R	51	RS1/16S470J
R	52	RS1/16S103J
R	53	RS1/16S103J
R	54	RS1/16S331J
R	55	RS1/16S331J
R	56	RS1/16S560J
R	57	RS1/16S560J
R	58	RS1/16S102J
R	59	RS1/16S225J
R	60	RS1/16S133J
R	61	RS1/16S433J
R	62	RS1/16S562J
R	101	RS1/16S333J
R	102	RS1/16S103J
R	103	RS1/16S333J
R	104	RS1/16S562J
R	106	RS1/16S0R0J
R	108	RS1/16S0R0J
R	110	RS1/16S154J
R	111	RS1/16S273J
R	112	RS1/16S223J
R	113	RS1/16S222J
R	114	RS1/16S333J
R	115	RS1/16S334J
R	116	RS1/16S473J
R	117	RS1/16S333J
R	118	RS1/16S223J
R	122	RS1/16S0R0J
R	202	RS1/16S472J
R	203	RS1/16S225J
R	204	RS1/16S102J
R	205	RS1/16S220J
R	206	RS1/16S471J
R	208	RS1/16S104J
R	209	RS1/16S104J
R	210	RS1/16S563J
R	213	RS1/16S223J
R	902	RS1/16S103J
R	904	RS1/16S473J
R	907	RS1/16S103J
R	908	RS1/16S681J
R	909	RS1/16S473J
R	914	RS1/16S562J

CAPACITORS

C	1	CCSQCH5R0C50
C	2	CCSRCH5R0C50
C	4	CCSRCJ3R0C50
C	6	CKSQYB105K10
C	8	CKSRYB222K50
C	10	CCSRCH220J50
C	11	CCSRCH150J50
C	12	CCSRCH8R0D50
C	14	CCSRCJ3R0C50
C	15	CKSRYB103K50
C	16	CKSRYB222K50
C	17	CKSRYB222K50
C	18	CCSRCJ3R0C50
C	19	CKSRYB103K50
C	20	CKSRYB103K50
C	21	CKSRYB103K50
C	24	CKSQYB334K16
C	31	CKSRYB222K50
C	32	CCSRCH470J50
C	35	CKSRYB103K50
C	51	CKSRYB103K50
C	52	CKSRYB473K16
C	53	CCSRCK2R0C50
C	54	CKSRYB103K50
C	55	CKSRYB104K16

=====Circuit Symbol and No.	Part Name	Part No.
C 56		CKSRYB104K16
C 58		CKSQYB224K16
C 59		CKSRYB223K25
C 60		CKSRYB104K16
C 101		CEALNP100M10
C 102		CCSRCH151J50
C 103		CKSRYB473K16
C 105		CKSRYB682K25
C 106		CEAL2R2M50
C 107		CKSRYB103K50
C 108		CKSQYB474K16
C 109		CKSQYB474K16
C 110		CKSRYB104K16
C 111		CKSRYB104K16
C 112		CKSRYB104K16
C 113		CKSRYB123K25
C 114		CEAL220M6R3
C 115		CKSRYB473K16
C 116		CEAL2R2M50
C 117		CKSRYB102K50
C 120		CKSRYB153K25
C 121		CKSRYB332K50
C 122		CKSRYB682K25
C 123		CKSRYB681K50
C 125		CKSRYB103K50
C 126		CKSRYB103K50
C 127		CEAL2R2M50
C 128		CKSRYB103K50
C 201		CCSRCH471J50
C 202		CCSRCH100D50
C 203		CKSRYB104K16
C 204		CKSRYB332K50
C 205		CKSRYB103K50
C 206		CKSRYB104K16
C 207		CKSRYB473K16
C 208		CCSRCH560J50
C 209		CEAL470M6R3
C 210		CKSRYB103K50
C 211		CKSRYB103K50
C 212		CCSRCH101J50
C 215		CKSRYB223K25
C 216		CKSQYB334K16
C 217		CKSRYB103K50
C 219		CKSQYB105K10
C 220		CKSRYB104K16
C 221		CKSRYB473K16
C 222		CKSQYB334K16
C 223		CKSQYB474K16
C 224		CKSRYB104K16
C 225		CKSRYB272K50
C 226		CKSRYB682K25
C 902		CCSRCH270J50
C 904		CKSRYB223K25
C 905		CKSRYB103K50
C 906		CCSRTH100D50
C 907		CCSRTH150J50
C 909		CCSRTH100D50
C 910		CKSRYB332K50
C 912		CKSQYB474K16
C 913		CKSRYB223K25
914		CKSRYB682K25
C 915		CKSQYB223K25
C 916		CKSQYB474K16
C 917		CKSYB475K10
C 918		CKSRYB223K25
C 919		CKSQYB225K10
C 920		CCSRCH270J50
C 921		CCSRCH270J50
C 922		CKSYB105K16
C 923		CKSRYB103K50

=====Circuit Symbol and No.	Part Name	Part No.
C	Unit Number : CWM6101(DEH-2000R/X1N/EW)	
	Unit Name : Keyboard Unit	
MISCELLANEOUS		
IC 1801	IC	PD6294A
D 1801	Diode Network	DA204U
D 1802	Diode Network	DA204U
X 1801	Radiator 5.00MHz	CSS1423
S 1801	Switch	CSG1110
S 1802	Switch	CSG1111
S 1803	Switch	CSG1110
S 1804	Switch	CSG1110
S 1805	Switch	CSG1110
S 1806	Switch	CSG1110
S 1807	Switch	CSG1110
S 1808	Switch	CSG1110
S 1809	Switch	CSG1110
S 1810	Switch	CSG1111
S 1811	Switch	CSG1110
S 1812	Switch	CSG1111
S 1813	Switch	CSG1110
S 1814	Switch	CSG1111
S 1815	Switch	CSG1111
S 1816	Switch	CSG1111
S 1817	Switch	CSG1111
S 1818	Switch	CSG1111
S 1819	Switch	CSG1110
S 1820	Switch	CSG1111
S 1821	Switch	CSG1111
S 1822	Switch	CSG1111
IL 1801	Lamp 14V 40mA	CEL1549
IL 1802	Lamp 14V 40mA	CEL1549
IL 1803	Lamp 14V 40mA	CEL1549
IL 1804	Lamp 14V 40mA	CEL1549
IL 1805	Lamp 14V 40mA	CEL1549
LCD1801	LCD	CAW1499
RESISTORS		
R 1801		RS1/8S222J
R 1802		RS1/8S222J
R 1803		RS1/10S472J
R 1844		RS1/10S103J
CAPACITORS		
C 1801		CKSQYB104K50
C 1802		CEH100M6R3
C 1803		CKSQYB104K50
C 1804		CKSQYB104K50
C 1805		CKSQYB104K50
C 1806		CKSQYB104K50
C	Unit Number : CWM6099(DEH-2030R/X1N/EW, DEH-2020R/X1N/GR)	
	Unit Name : Keyboard Unit	
MISCELLANEOUS		
IC 1801	IC	PD6294A
D 1801	Diode Network	DA204U
D 1802	Diode Network	DA204U
X 1801	Radiator 5.00MHz	CSS1423
S 1801	Switch	CSG1110
S 1802	Switch	CSG1111
S 1803	Switch	CSG1110
S 1804	Switch	CSG1110
S 1805	Switch	CSG1110
S 1806	Switch	CSG1110

=====Circuit Symbol and No.		===Part Name	Part No.
S	1807	Switch	CSG1110
S	1808	Switch	CSG1110
S	1809	Switch	CSG1110
S	1810	Switch	CSG1111
S	1811	Switch	CSG1110
S	1812	Switch	CSG1111
S	1813	Switch	CSG1110
S	1814	Switch	CSG1111
S	1815	Switch	CSG1111
S	1816	Switch	CSG1111
S	1817	Switch	CSG1111
S	1818	Switch	CSG1111
S	1819	Switch	CSG1110
S	1820	Switch	CSG1111
S	1821	Switch	CSG1111
S	1822	Switch	CSG1111
IL	1801	Lamp 14V 40mA	CEL1508
IL	1802	Lamp 14V 40mA	CEL1508
IL	1803	Lamp 14V 40mA	CEL1508
IL	1804	Lamp 14V 40mA	CEL1508
IL	1805	Lamp 14V 40mA	CEL1508
LCD	1801	LCD	CAW1499

RESISTORS

R	1801		RS1/8S222J
R	1802		RS1/8S222J
R	1803		RS1/10S472J
R	1844		RS1/10S103J

CAPACITORS

C	1801		CKSQYB104K50
C	1802		CEH100M6R3
C	1803		CKSQYB104K50
C	1804		CKSQYB104K50
C	1805		CKSQYB104K50
C	1806		CKSQYB104K50

D Unit Number : CWX2344
Unit Name : Control Unit

MISCELLANEOUS

IC	201	IC	UPD63710GC
IC	301	IC	BA5985FM
IC	601	IC	TA2063F
IC	701	IC	BA05SFP
Q	101	Transistor	2SB1132
D	801	LED	CL200IRX
D	802	LED	CL200IRX
X	201	Ceramic Oscillator 16.934MHz	CSS1456
S	801	Spring Switch(HOME)	CSN1051
S	802	Spring Switch(CLAMP)	CSN1052

RESISTORS

R	101		RS1/8S120J
R	102		RS1/8S100J
R	103		RS1/16S222J
R	201		RS1/16S104J
R	205		RS1/16S103J
R	206		RS1/16S393J
R	207		RS1/16S182J
R	208		RS1/16S304J
R	210		RS1/16S0R0J
R	212		RS1/16S103J
R	213		RS1/16S103J
R	214		RS1/16S123J
R	215		RS1/16S273J
R	216		RS1/16S273J
R	309		RS1/16S473J
R	310		RS1/16S473J
R	503		RA4C681J
R	504		RS1/16S102J
R	601		RS1/16S102J
R	602		RS1/16S102J
R	603		RS1/16S223J
R	604		RS1/16S223J
R	801		RS1/8S751J
R	802		RS1/8S751J

CAPACITORS

C	101		CCSRCH102J25
C	102		CKSQYB104K16
C	103		CEV101M6R3
C	104		CEV470M6R3
C	105		CKSQYB334K16
C	106		CKSQYB334K16
C	107		CKSQYB334K16
C	201		CKSQYB104K16
C	202		CEV101M6R3
C	203		CKSQYB104K16
C	204		CKSRYB332K50
C	205		CKSQYB104K16
C	206		CKSRYB392K50
C	207		CKSQYB224K16
C	208		CCSRCH270J50
C	209		CCSRCJ3R0C50
C	210		CCSRCH221J50
C	211		CCSRCH101J50
C	212		CKSQYB682K50
C	213		CKSQYB104K16
C	214		CKSQYB104K16
C	215		CKSQYB104K16
C	216		CKSQYB104K16
C	217		CKSQYB104K16
C	218		CKSQYB104K16
C	219		CKSQYB104K16
C	220		CKSQYB104K16
C	301		CEV470M16
C	502		CKSRYB471K50
C	601		CEV4R7M35
C	602		CEV4R7M35
C	603		CCSQSL152J50
C	604		CCSQSL152J50
C	605		CEV220M6R3
C	701		CEV101M6R3
C	702	22µF/6.3V	CCH1300
C	703		CKSQYB334K16

E Unit Number :
Unit Name : Photo Unit

Q	1	Photo-transistor	CPT230SX-TU
Q	2	Photo-transistor	CPT230SX-TU

Miscellaneous Parts List

		Pickup Unit(Service)(P8)	CXX1285
M	1	Motor Unit(CARRIAGE)	CXB2190
M	2	Motor Unit(LOADING)	CXB2195
M	3	Motor Unit(SPINDLE)	CXB2562
		Fuse(10A)	CEK1136

6. ADJUSTMENT

6.1 CD ADJUSTMENT

1) Precautions

- This unit uses a single power supply (+5V) for the regulator. The signal reference potential, therefore, is connected to REFO(approx. 2.5V) instead of GND.
  If REFO and GND are connected to each other by mistake during adjustments, not only will it be impossible to measure the potential correctly, but the servo will malfunction and a severe shock will be applied to the pick-up. To avoid this, take special note of the following.
  Do not connect the negative probe of the measuring equipment to REFO and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to REFO with the channel 2 negative probe connected to GND.
  Since the frame of the measuring instrument is usually at the same potential as the negative probe, change the frame of the measuring instrument to floating status.
  If by accident REFO comes in contact with GND, immediately switch the regulator or power OFF.

- Always make sure the regulator is OFF when connecting and disconnecting the various filters and wiring required for measurements.

- Before proceeding to further adjustments and measurements after switching regulator ON, let the player run for about one minute to allow the circuits to stabilize.

- Since the protective systems in the unit's software are rendered inoperative in test mode, be very careful to avoid mechanical and /or electrical shocks to the system when making adjustment.

- Disc detection during loading and eject operations is performed by means of a photo transistor in this unit.Consequently, if the inside of the unit is exposed to a strong light source when the outer casing is removed for repairs or adjustment, the following malfunctions may occur.
  *During PLAY, even if the eject button is pressed,the disc will not be ejected and the unit will remain in the PLAY mode.
  *The unit will not load a disc.
  When the unit malfunctions this way, either re-position the light source, move the unit or cover the photo transistor.

2) Test Mode

This mode is used for adjusting the CD mechanism module of the device.

- Test mode starting procedure
  Reset while pressing the **4** and **6** keys together.

- Test mode cancellation
  Switch ACC, back-up OFF.

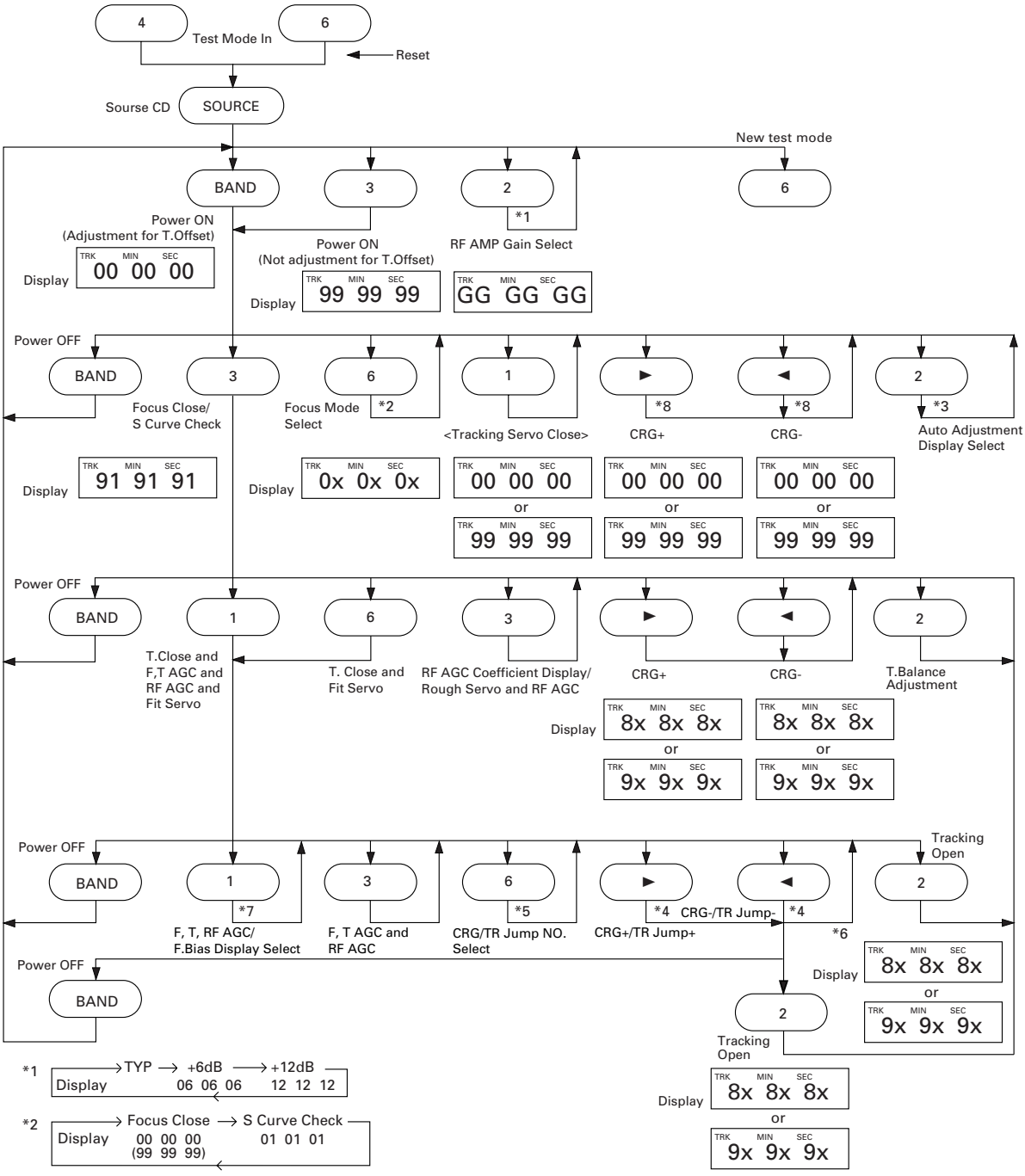
- After pressing the EJECT key, do not press any other key until the disk is completely ejected.

- If the ► or ◄ key is pressed while focus search is in progress, immediately turn the power off (otherwise the actuator may be damaged due to adhesion of the lenses).

- Jump operation of TRs other than 100TR continues after releasing the key. CRG move and 100TR jump operations are brought into the “Tracking close” status when the key is released.

- Powering Off/On resets the jump mode to “Single TR (91)”, the RF AMP gain setting to 0 dB, and the automatic adjustment value to the initial value.

● Flow Chart



*1 → TYP → +6dB → +12dB →
Display 06 06 06 12 12 12

*2 → Focus Close → S Curve Check →
Display 00 00 00 (99 99 99) 01 01 01

*3 → F.Offset Display → RF.Offset Display → F.Cansel Display →
[F.Cancel Value = {Top Rank 8bit of Set Value (7F [H] to 80 [H]) + 128} / 4
= 63 [D] to (32 [D]) to 00 [D]]

*4 Single TR/32TR/100TR

*5 → Single TR → 32TRK → 100TRK → CRG Move →
Display 9x(8x):91(81) 92(82) 93(83) 94(84)

*6 CRG Move, 100TR Jump Only

*7 → TRK, MIN, SEC → F.AGC Gain → T.AGC Gain → RF AGC Gain →
(F,T.AGC Gain = (Present Value/Initial Value) ¥ 20)

*8 Voltage of CRG Motor = 2 [V]

6.2 CHECKING THE GRATING AFTER CHANGING THE PICKUP UNIT

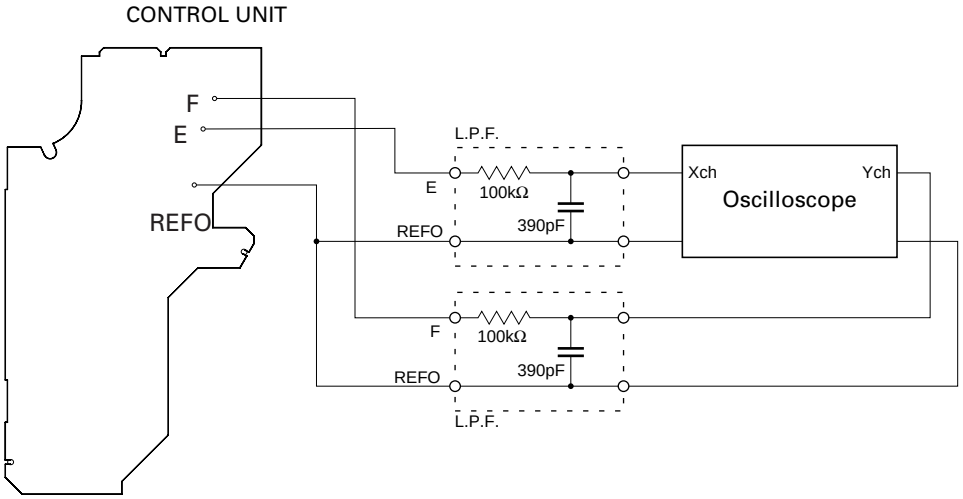
• **Note :**
The grating angle of the PU unit cannot be adjusted after the PU unit is changed. The PU unit in the CD mechanism module is adjusted on the production line to match the CD mechanism module and is thus the best adjusted PU unit for the CD mechanism module. Changing the PU unit is thus best considered as a last resort. However, if the PU unit must be changed, the grating should be checked using the procedure below.

• **Purpose :**
To check that the grating is within an acceptable range.

• **Symptoms of Mal-adjustment :**
If the grating is off by a large amount symptoms such as being unable to close tracking, being unable to perform track search operations, or track searching taking a long time, may appear.

• **Method :**

• Measuring Equipment	• Oscilloscope, Two L.P.F.
• Measuring Points	• E, F, REFOUT
• Disc	• ABEX TCD-784
• Mode	• TEST MODE



• **Checking Procedure**
1. In test mode, load the disc and switch the 5V regulator on.
2. Using the ► and ◄ buttons, move the PU unit to the innermost track.
3. Press key **3** to close focus, the display should read "91". Press key **2** to implement the tracking balance adjustment the display should now read "81". Press key **3** 2 times. The display will change, returning to "81" on the fourth press.
4. As shown in the diagram above, monitor the LPF outputs using the oscilloscope and check that the phase difference is within 75° . Refer to the photographs supplied to determine the phase angle.
5. If the phase difference is determined to be greater than 75° try changing the PU unit to see if there is any improvement. If, after trying this a number of times, the grating angle does not become less than 75° then the mechanism should be judged to be at fault.

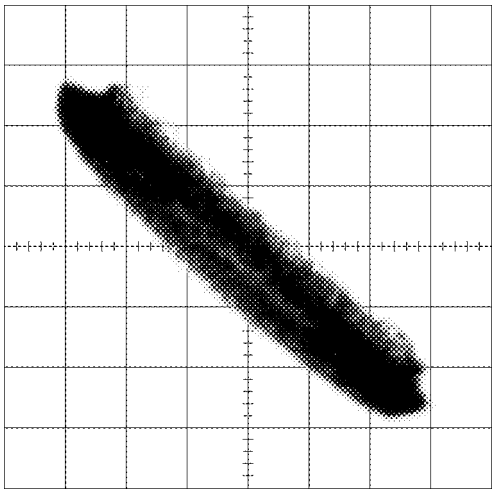
• **Note**
Because of eccentricity in the disc and a slight misalignment of the clamping center the grating waveform may be seen to "wobble" (the phase difference changes as the disc rotates). The angle specified above indicates the average angle.

• **Hint**
Reloading the disc changes the clamp position and may decrease the "wobble".

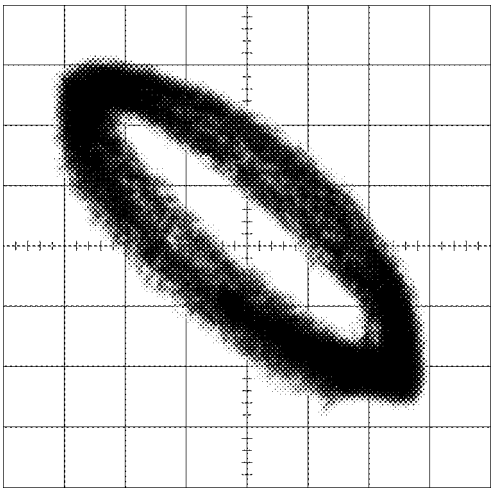
Grating waveform

Ech → Xch 20mV/div, AC
Fch → Ych 20mV/div, AC

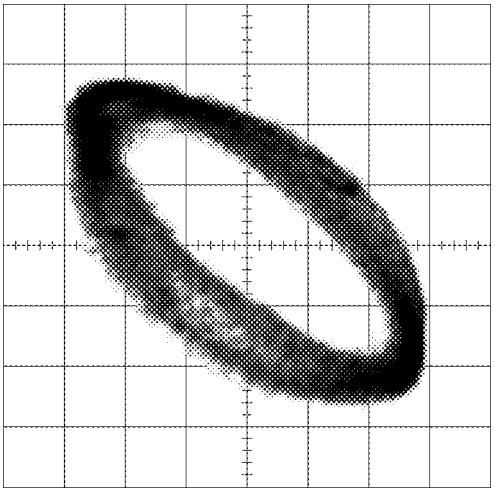
0°



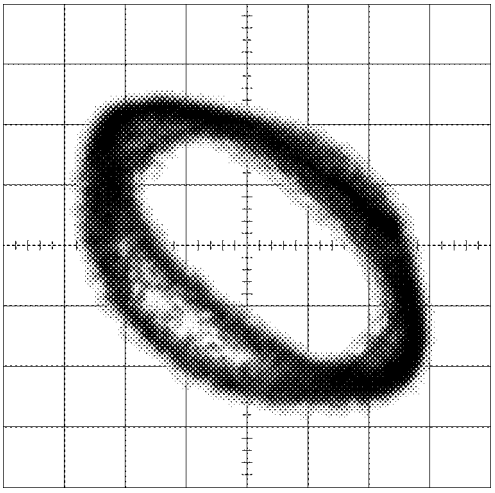
30°



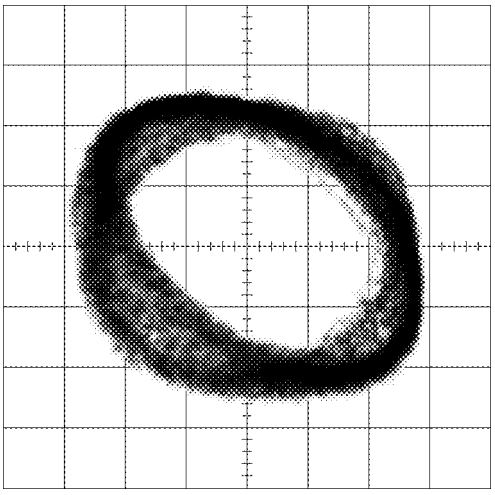
45°



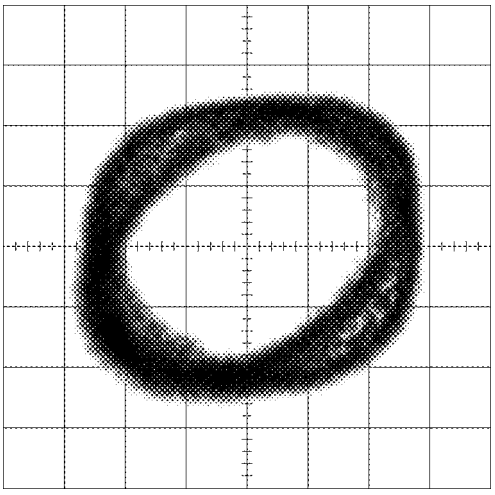
60°



75°



90°



7. GENERAL INFORMATION

7.1 PARTS

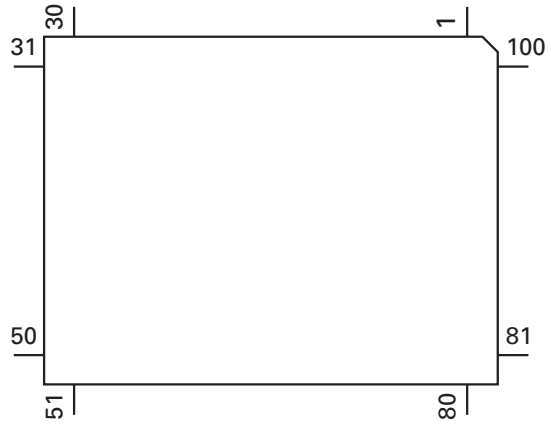
7.1.1 IC

● **Pin Functions (PE5025A)**

Pin No.	Pin Name	I/O	Function and Operation
1	DRSYS	O	Door system select output
2	TELMUTE	I	Telephone mute input
3	SYSPW	O	System power supply control output
4	DRELAY	O	External relay output
5	TESTIN	I	Test program mode input
6	$\overline{\text{DRST}}$	O	RDS reset output
7	ERROR	O	RDS disapprove of error correction output
8	$\overline{\text{SK}}$	I	RDS SK signal input
9	RECIVE	O	During RDS data reception output
10	TUNPW	O	Tuner power control output
11	$\overline{\text{RESET}}$	I	Reset input
12	XT2		Not used (open)
13	XT1		Not used (GND)
14	VSS		GND
15	X2		Crystal oscillator connection pin
16	X1		Crystal oscillator connection pin
17	REGOFF		Connect to VSS
18	REGC		Capacitor for regulator connect pin
19	VDD		Power supply
20	GRNILM	O	Green illumination select output
21	NC		Not used
22	$\overline{\text{ADPW}}$	O	A/D converter power supply output
23,24	NC		Not used
25	ASENB	O	Slave power supply control output
26	ROMDATA	O	ROM correction data output
27	ROMCLK	O	ROM correction clock output
28	MUTE	O	System mute output
29	$\overline{\text{FM}}$/AM	O	RDS decoder power select output
30	LOCL	O	LOCL output
31	LOCH	O	LOCH output
32	TUNPCE2	O	PLL IC chip enable output
33	VCK	O	Clock output for electronic volume
34	VST	O	Strobe pulse output for electronic volume
35	VDT	O	Data output for electronic volume
36	$\overline{\text{TMUTE}}$	O	Tuner mute output
37	ROMCS	O	ROM correction chip select output
38	SD	I	SD input
39	$\overline{\text{ST}}$	I	FM stereo input
40	VSS		GND
41	VDD		Power supply
42,43	NC		Not used
44	$\overline{\text{RDSLK}}$	I	RDS LK signal input
45	$\overline{\text{CURRQ}}$	O	Tuner voltage FIX output
46	RDT	I	RDS demodulation data input
47–50	NC		Not used
51	$\overline{\text{SWVDD}}$	O	Keyboard unit power supply control output
52	$\overline{\text{DSENS}}$	I	Grille detach sense input
53	CONT	O	CD server driver power control output
54	CD5VON	O	CD +5V power control output
55	NC		Not used
56	VDCONT	O	CD VD power control output

Pin No.	Pin Name	I/O	Function and Operation
57	CDMUTE	O	CD mute control output
58	CDEJET	O	CD eject control output
59	CDLOAD	O	CD LOAD motor loading control output
60	LOCK	I	CD spindle lock input
61	FOK	I	CD focus OK input
62	PCL	O	Clock adjustment output
63	MIRR	I	CD mirror detector input
64	$\overline{\text{CLAMP}}$	I	CD disc clamp sense input
65	$\overline{\text{XSCK}}$	O	CD LSI clock output
66	XSI	I	CD LSI data input
67	XSO	O	CD LSI data output
68	XA0	O	CD LSI command/data control output
69	$\overline{\text{XRST}}$	O	CD LSI reset output
70	$\overline{\text{XSTB}}$	O	CD LSI strobe output
71,72	NC		Not used
73	TEST	I	Test terminal
74	SL	I	Tuner signal level input
75	MODEL1	I	Model select input
76	NL1	I	RDS noise level input
77	SDBW	I	SD bandwidth input
78	EJTSNS	I	CD disc EJECT position detect
79	DSCSNS	I	CD disc detect input
80	VDSENS	I	CD VD over voltage / short-circuit sense input
81	TEMP	I	CD temperature sense input (CD)
82	(VDD)		A/D converter power supply terminal
83	(VDD)		A/D converter reference voltage terminal
84	(GND)		A/D converter GND
85,86	NC		Not used
87	GND		GND
88	$\overline{\text{LDET}}$	I	RDS PLL lock sense input
89	$\overline{\text{RCK}}$	I	RDS demodulation clock input
90	RDS57K	I	RDS 57kHz pulse count input
91	NC		Not used
92	$\overline{\text{ASENS}}$	I	ACC power sense input
93	$\overline{\text{BSENS}}$	I	Back up power sense input
94	TUNPDI	I	PLL IC data input
95	KEYDT	I	Key data input
96	DPDT	O	Display data output
97	TUNPCK	O	PLL IC clock output
98	TUNPDO	O	PLL IC data output
99	TUNPCE	O	PLL IC chip enable
100	PEE	O	Beep tone output

*PE5025A



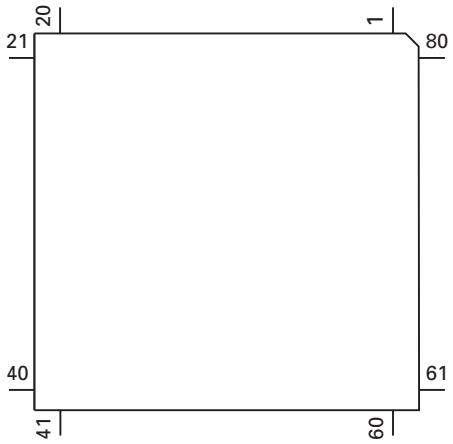
IC's marked by* are MOS type.

Be careful in handling them because they are very liable to be damaged by electrostatic induction.

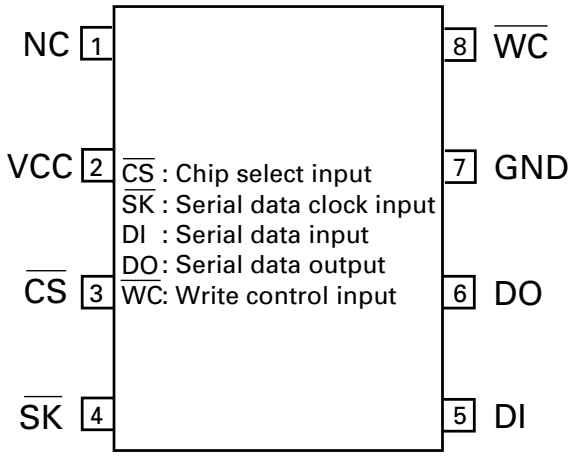
● **Pin Functions (PD6294A)**

Pin No.	Pin Name	I/O	Function and Operation
1	VSS		GND
2	X1		Crystal oscillator connection pin
3	X0		Crystal oscillator connection pin
4	NC		Not used
5,6	MOD1,0	I	Connect to GND
7	NC		Not used
8	KYDT	O	Key data output
9	DPDT	I	Display data input
10	REMIN	I	Remote control pulse input
11,12	NC		Not used
13-16	$\overline{KD4}$-$\overline{KD1}$	I	Key data input
17-22	KST6-KST1	O	Key strobe output
23	VDD		VDD
24-73	SEG49-0	O	LCD segment output
74-77	COM3-0	O	LCD common output
78	VLCD	I	LCD voltage input
79,80	V2,V1		Power supply terminal

*PD6294A



BR9010FV



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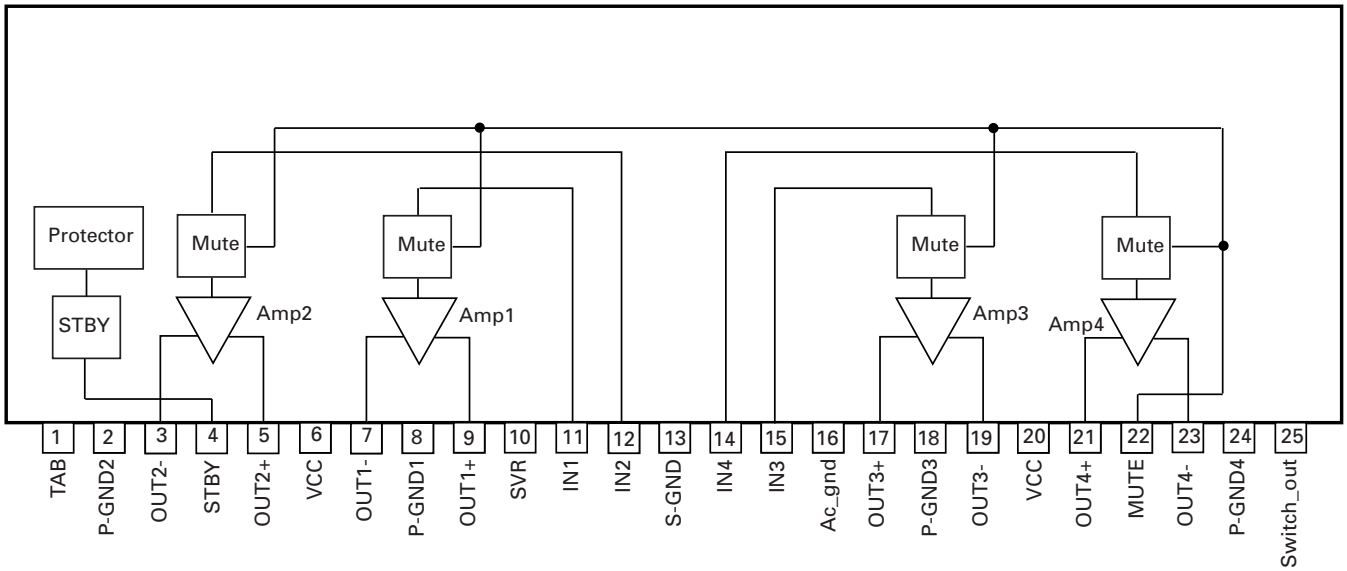

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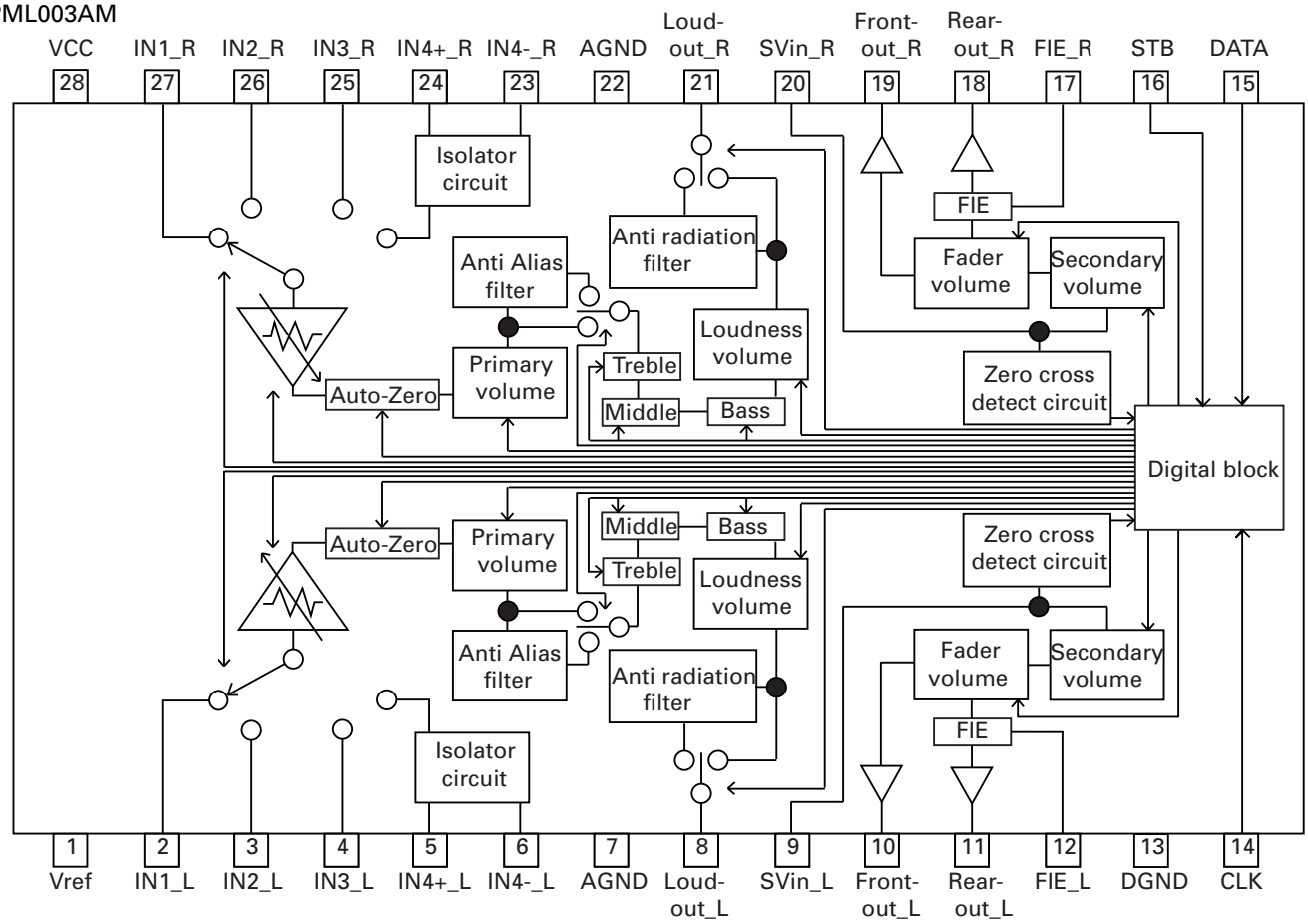
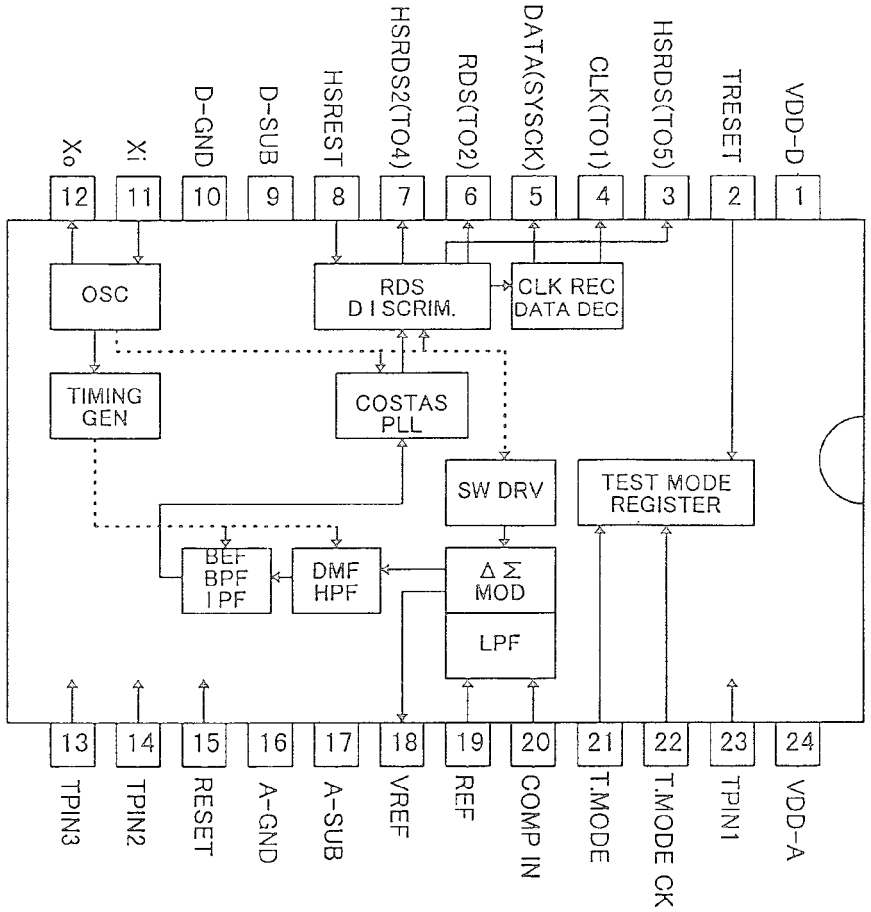


PM4009A

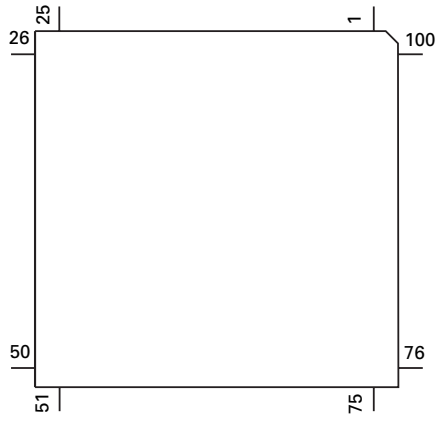


● **Pin Functions (UPD63710GC)**

Pin No.	Pin Name	I/O	Function and Operation
1	GND		Logic circuit GND
2	HOLD	I/O	Defect detection output
3	MIRR	I/O	MIRR output
4	FOK	O	RFOK signal output
5	$\overline{\text{RST}}$	I	Reset signal input
6	A0	I	Command/parameter identification signal input
7	$\overline{\text{STB}}$	I	Data strobe signal input
8	$\overline{\text{SCK}}$	I	Clock signal input for serial data input/output
9	SO	O	Serial data and status signal output
10	SI	I	Serial data input
11	VDD		Positive power supply terminal to logic circuit
12	DA.VDD		Positive power supply terminal to D/A converter
13	NC		Not used
14, 15	DA.GND		D/A converter GND
16	NC		Not used
17	DA.VDD		Positive power supply terminal to D/A converter
18	R+	O	Right channel audio data output
19	R-	O	Right channel audio data output
20	L-	O	Left channel audio data output
21	L+	O	Left channel audio data output
22	X.VDD		Positive power supply terminal to crystal oscillation circuit
23	$\overline{\text{XTAL}}$	O	Crystal oscillator connect pin
24	XTAL	I	Crystal oscillator connect pin
25	X.GND		Crystal oscillation circuit GND
26	VDD		Positive power supply terminal to logic circuit
27	EMPH	O	Output pin for the pre-emphasis data in the sub-Q code
28	FLAG	O	Flag output pin to indicate that audio data currently being output consists of noncorrectable data
29	DIN	I	Serial data input to internal DAC
30	DOUT	O	Serial audio data output
31	SCKIN	I	Serial clock input to internal DAC
32	SCKO	O	Audio data that is output from DOUT changes at rising edge of this clock
33	LRCKIN	I	LRCK signal input to internal DAC
34	LRCK	O	Signals to distinguish the right and left channels of the audio data output from DOUT
35	WDCK	O	Output double the frequency of LRCK
36	TX	O	Digital audio interface data output
37	GND		Logic circuit GND
38	C16M	O	Oscillator clock buffering output
39	LIMIT	I	Status of the pin is output at Bit 5 of the status output
40	VDD		Positive power supply terminal to logic circuit
41	LOCK	O	EFM synchronous detection signal
42	RFCK	O	Frame synchronous signal of XTAL-system
43	WFCK	O	Frame synchronous signal of PLL-system
44	PLCK	O	Monitor pin of bit clock
45	GND		Logic circuit GND
46	C1D1	O	Output pin for indicating the C1 error correction results
47	C1D2	O	Output pin for indicating the C1 error correction results
48	C2D1	O	Output pin for indicating the C2 error correction results
49	C2D2	O	Output pin for indicating the C2 error correction results
50	C2D3	O	Output pin for indicating the C2 error correction results
51	VDD		Positive power supply terminal to logic circuit
52	PACK	O	CD-TEXT PACK synchronous signal
53	TSO	O	CD-TEXT data serial output
54	TSI	I	CD-TEXT control parameter serial input
55	$\overline{\text{TSCK}}$	I	CD-TEXT serial clock input
56	TSTB	I	CD-TEXT parameter strobe signal input
57	GND		Logic circuit GND
58	TEST	I	Test pin

Pin No.	Pin Name	I/O	Function and Operation
59	ATEST	I/O	Test pin
60	RFMODE	I	Use/not use select for internal RF amplifier
61	A.GND		Analog circuit GND
62	FD	O	Focus drive output
63	TD	O	Tracking drive output
64	SD	O	Sled drive output
65	MD	O	Spindle drive output
66	DACO	O	DAC output for adjustment
67	FBAL	O	DAC output for adjustment
68	TBAL	O	DAC output for adjustment
69	TEVCA	O	DAC output for adjustment
70	A.VDD		Power supply terminal to analog circuit
71	EFM	O	EFM signal output
72	ASY	I	EFM comparator reference voltage input
73	C3T		3T detection capacitor additional pin
74	RFI	I	RF signal input for EFM data regulation
75	AGCO	O	RF signal output of after gain adjustment
76	AGCI	I	RF-AGC amplifier input
77	RFO	O	RF summing amplifier output
78	EQ2		RF amplifier equalizer parts additional pin
79	EQ1		RF amplifier equalizer parts additional pin
80	RF-	I	RF summing amplifier inverted input
81	A.GND		Analog circuit GND
82	A	I	Photo detector A input
83	C	I	Photo detector C input
84	B	I	Photo detector B input
85	D	I	Photo detector D input
86	F	I	Photo detector F input
87	E	I	Photo detector E input
88	A.VDD		Positive power supply terminal to analog circuit
89	REFOUT	O	Reference electric potential output
90	FE-	I	Focus error amplifier inverted input
91	FEO	I/O	Focus error amplifier output
92	TE-	I	Tracking error amplifier inverted input
93	TEO	I/O	Tracking error amplifier output
94	TE2	I/O	Tracking error output of after amplification
95	TEC	I	Tracking comparator input
96	A.GND		Analog circuit GND
97	PD	I	PD detection signal input for LD output monitor
98	LD	O	LD control current output
99	PN	I	APC circuit control polarity set pin
100	A.VDD		Positive power supply terminal to analog circuit

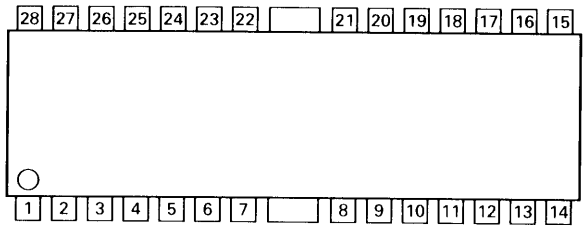
*UPD63710GC



● **Pin Functions (BA5985FM)**

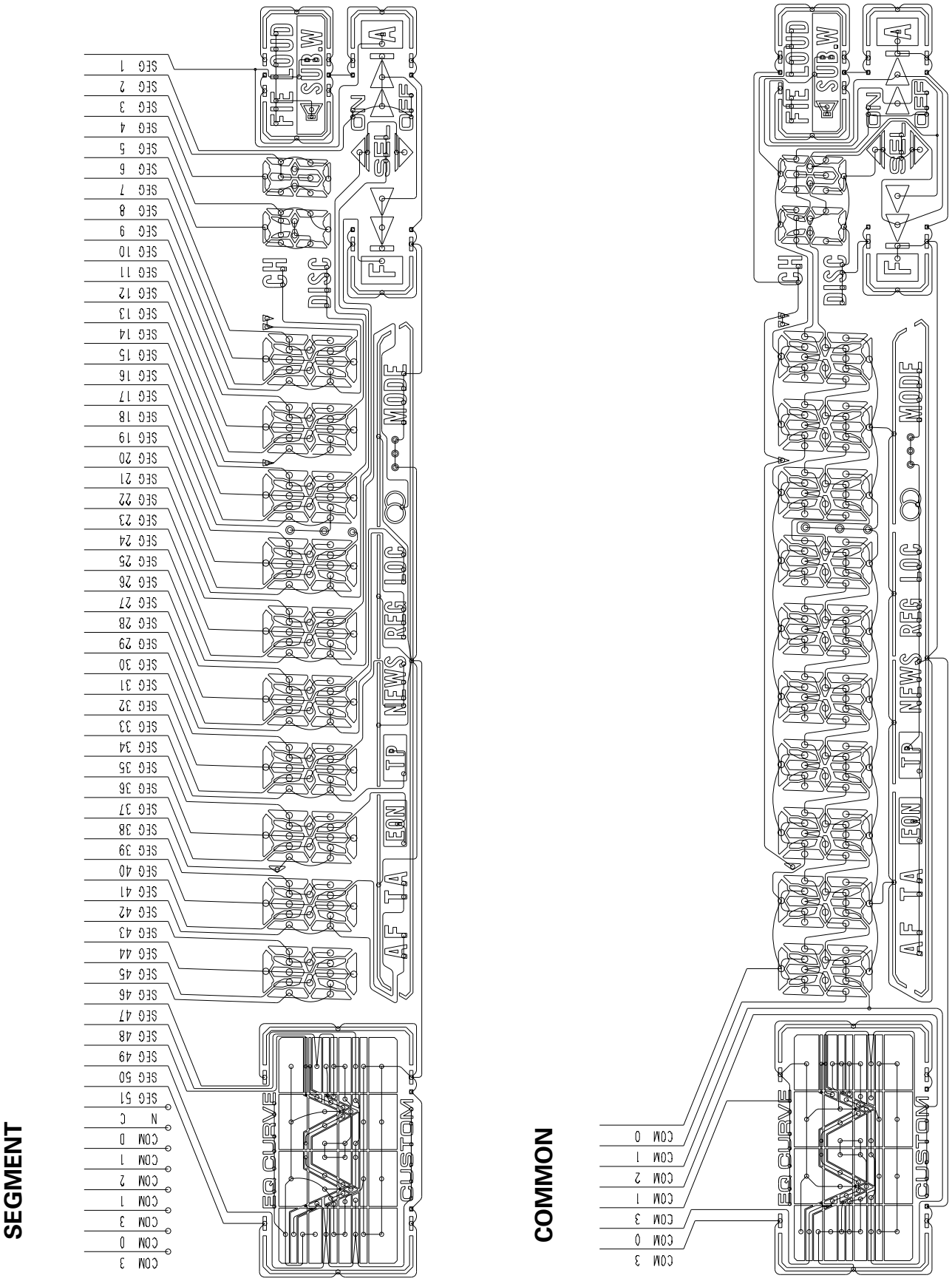
Pin No.	Pin Name	I/O	Function and Operation
1	FWD	I	Loading driver FWD input
2	OPIN1(+)	I	CH1 pre-amplifier input
3	OPIN1(–)	I	CH1 pre-amplifier inverted input
4	OPOUT1	O	CH1 pre-amplifier output
5	OPIN2(+)	I	CH2 pre-amplifier input
6	OPIN2(–)	I	CH2 pre-amplifier inverted input
7	OPOUT2	O	CH2 pre-amplifier output
8	VCC		Power supply
9	VOL(–)	O	Loading driver negative output
10	VOL(+)	O	Loading driver positive output
11	VO2(–)	O	Driver CH2 negative output
12	VO2(+)	O	Driver CH2 positive output
13	VO1(–)	O	Driver CH1 negative output
14	VO1(+)	O	Driver CH1 positive output
15	VO4(+)	O	Driver CH4 positive output
16	VO4(–)	O	Driver CH4 negative output
17	VO3(+)	O	Driver CH3 positive output
18	VO3(–)	O	Driver CH3 negative output
19	GND		GND
20	BIAS	I	Bias input
21	MUTE		Mute control
22	OPOUT3	O	CH3 pre-amplifier output
23	OPIN3(–)	I	CH3 pre-amplifier inverted input
24	OPIN3(+)	I	CH3 pre-amplifier input
25	OPOUT4	O	CH4 pre-amplifier output
26	OPIN4(–)	I	CH4 pre-amplifier inverted input
27	OPIN4(+)	I	CH4 pre-amplifier input
28	REV	I	Loading driver REV input

BA5985FM



7.1.2 DISPLAY

● **CAW1499**



7.2 DIAGNOSIS

7.2.1 DISASSEMBLY

● Removing the Case Unit(not shown)

1. Remove the Case Unit.

● Removing the Panel Assy(Fig.1)

1 Disengage the stoppers at two locations.

2 Remove the Panel Assy.

● Removing the CD Mechanism Module (not shown)

1. Remove the four screws.
2. Disconnect the connector, and then remove the CD Mechanism Module.

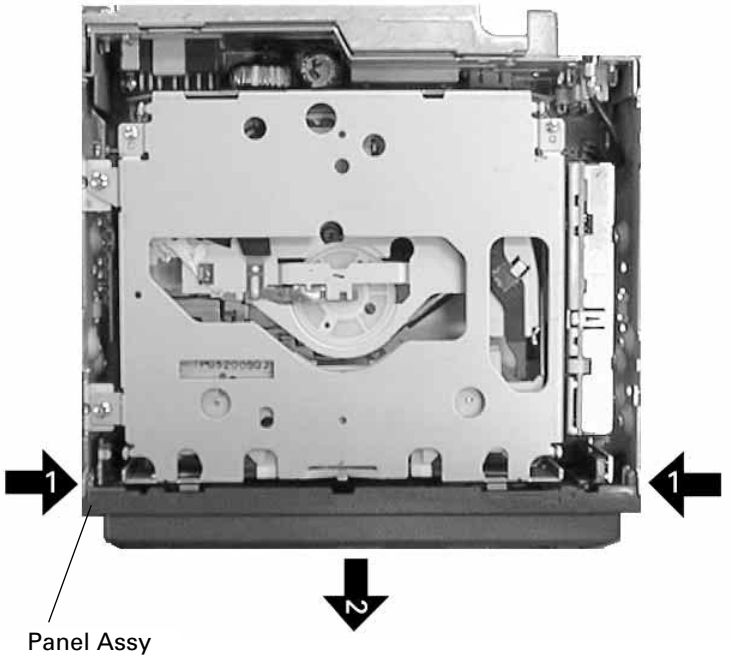


Fig.1

● Removing the Tuner Amp Unit(Fig.2)

1 Remove the two screws.

2 Remove the three screws.

3 Remove the screw.

4 Straighten the tabs at four locations indicated.
Remove the Tuner Amp Unit.

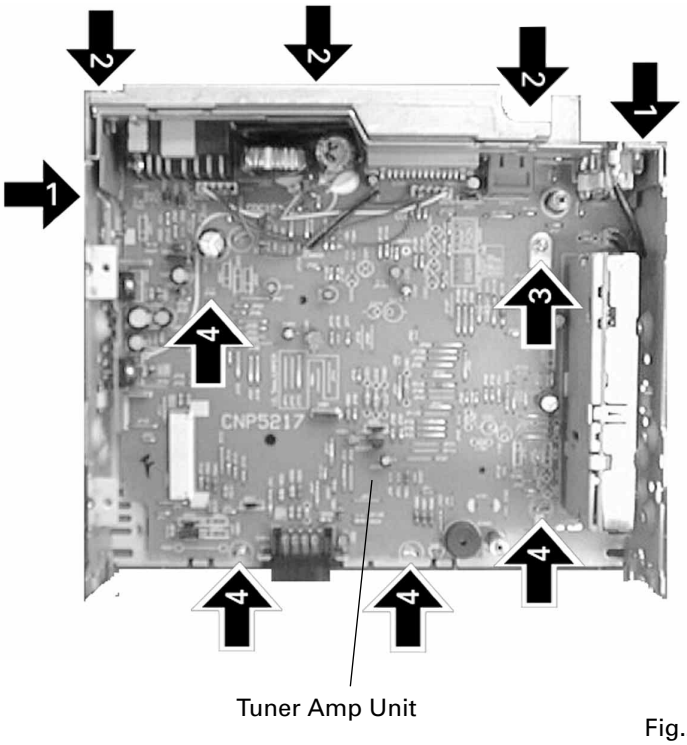


Fig.2

7.2.2 TEST MODE

● Error Messages

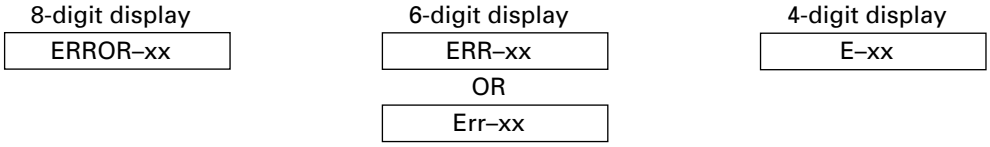
If a CD is not operative or stopped during operation due to an error, the error mode is turned on and cause(s) of the error is indicated with a corresponding number. This arrangement is intended at reducing nonsense calls from the users and also for facilitating trouble analysis and repair work in servicing.

(1) Basic Indication Method

1) When SERRORM is selected for the CSMOD (CD mode area for the system), error codes are written to DMIN (minutes display area) and DSEC (seconds display area). The same data is written to DMIN and DSEC. DTNO remains in blank as before.

2) Head unit display examples

Depending on display capability of LCD used, display will vary as shown below. xx contains the error number.



(2) Error Code List

Code	Class	Displayed error code	Description of the code and potential cause(s)
10	Electricity	Carriage Home NG	CRG can't be moved to inner diameter. CRG can't be moved from inner diameter. → Failure on home switch or CRG move mechanism.
11	Electricity	Focus Servo NG	Focusing not available. → Stains on rear side of disc or excessive vibrations on REWRITABLE.
12	Electricity	Spindle Lock NG	Spindle not locked. Sub-code is strange (not readable). → Failure on spindle, stains or damages on disc, or excessive vibrations.
		Subcode NG	A disc not containing CD-R data is found. Turned over disc are found, though rarely. → Failure on home switch or CRG move mechanism.
		RF AMP NG	An appropriate RF AMP gain can't be determined. → CD signal error.
17	Electricity	Setup NG	APC protection doesn't work. Focus can be easily lost. → Damages or stains on disc, or excessive vibrations.
30	Electricity	Search Time Out	Failed to reach target address. → CRG tracking error or damages on disc.
A0	System	Power Supply NG	Power (VD) is ground faulted. → Failure on SW transistor or power supply (failure on connector).

Remarks: Mechanical errors are not displayed (because a CD is turned off in these errors).

Unreadable TOC does not constitute an error. An intended operation continues in this case.

A newly designed head unit must conform to the example given above.

Upper digits of an error code are subdivided as shown below:

1x: Setup relevant errors, 3x: Search relevant errors, 3x: Search relevant errors, Ax: Other errors.

● New Test Mode

S-CD plays the same way as before.

If an error such as off focus, spindle unlocking, unreadable sub-code, or sound skipping occurs after setup, its cause and time occurred (in absolute time) are displayed.

During setup, operational status of the control software (internal RAM: CPOINT) is displayed.

These displays and functions are prepared for enhancing aging in the servicing and efficiency of trouble analysis.

(1) Shifting to the New Test Mode

① Turn on the current test mode by starting the reset from the key (it varies between the products).

② Select S-CD for the source through the specified procedure including use of the [SOURCE] key, and inserting the disc. Then, press the [Jump Mode Selector] key while maintaining the regulator turned off.

③ After the above operations, the new test mode remains on irrespective of whether the S-CD is turned on or off. You can reset the new test mode by turning on the reset start.

* With some products, the new test mode can be reset through the same operations as that employed for shifting to the STBY mode (while maintaining the Acc turned off).

(2) Key Correspondence

Key	Test mode		New test mode	
(Example)	Power Off	Power On	In-play	Error Production
BAND	To power on (offset adjustment performed)	To power off	–	Time/Err.No. switching
►	–	FWD-Kick	FF/TR+	–
◄	–	REV-Kick	REV/TR-	–
1	–	T.Close (AGC performed) /parameter display switching	Scan	–
2	RF AMP gain switching	Parameter display switching /T.BAL adjustment/T.Open	Mode	–
3	To power on (offset adjustment not performed)	F.Close/RF AGC/F.T.AGC	–	–
6	–	F.Mode switching /T.Close (no AGC)/Jump switching	Auto/Manu	T.No./Time switching

Note: Eject and CD on/off is performed in the same procedure as that for the normal mode.

(3) Cause of Error and Error Code

Code	Class	Contents	Description and cause
40	Electricity	Off focus detected.	FOK goes low. → Damages/stains on disc, vibrations or failure on servo.
41	Electricity	Spindle unlocked.	FOK = Low continued for 50 msec. → Damages/stains on disc, vibrations or failure on servo.
42	Electricity	Sub-code unreadable.	Sub-code was unreadable for 50 msec. → Damages/stains on disc, vibrations or failure on servo.
43	Electricity	Sound skipping detected.	Last address memory function was activated. → Damages/stains on disc, vibrations or failure on servo.

Note: Mechanical errors during aging are not displayed.

The error codes should be indicated in the same way as in the normal mode.

(4) Display of Operational Status (CPOINT) during Setup

Status No.	Contents	Protective action
00	CD+5V ON process in progress.	None
01	Servo LSI initialization (1/3) in progress.	None
02	Servo LSI CRAM initialization in progress.	None
03	Servo LSI initialization (2/3) in progress.	None
04	Offset adjustment (1/3) in progress.	None
05	Offset adjustment (2/3) in progress.	None
06	Offset adjustment (3/3) in progress.	None
07	FZD adjustment in progress.	None
08	Servo LSI initialization (3/3) in progress.	None
10	Carriage move to home position started.	None
11	Carriage move to home position started.	None
12	Carriage is moving toward inner diameter.	Specified 10 seconds has been passed or failure on home switch.
13	Carriage is moving toward outer diameter.	Specified 10 seconds has been passed or failure on home switch.
14	Carriage outer kick in progress.	None
15	Carriage outer diameter feed (1 second) in progress.	None
20	Servo close started.	None
21	Pre-processing for focus search started.	None
22	Spindle rotation and focus search started.	None
23	Waiting for focus close (XSI=Low).	Specified focus search time has been passed.
24	Standing by after focus close is over.	Specified focus search time has been passed.
25	Focus search preprocessing is in progress while setup protection is turned on.	None
26	Focus search preprocessing is in progress while focus recovery is turned on.	None
27	Wait time after focus close is set up.	Off focus.
28	Standing by after focus close is over.	Off focus.
29	Setup (1/2) before T balance adjustment is started.	Off focus.
30	Setup (2/2) before T balance adjustment is started.	Off focus.
31	T balance adjustment started.	Off focus.
32	T balance adjustment (1/2).	Off focus.
33	T balance adjustment (2/2).	Off focus.
34	Waiting for spindle rotation to end. Spindle rough servo.	Off focus.
35	Standing by after spindle rough servo is over.	Off focus.
36	RF AGC started.	Off focus.
37	RF AGC started.	Off focus.
38	RF AGC ending process in progress.	Off focus.
39	Tracking close in progress.	Off focus.
40	Standing by after tracking is closed. Carriage closing in progress.	Off focus.
41	Focus/tracking AGC started.	Off focus.
42	Focus AGC started.	Off focus.
43	Focus AGC in progress.	Off focus.
44	Tracking AGC in progress.	Off focus.
45	Standing by after focus/tracking AGC are over.	Off focus.
46	Spindle processes applicable servo.	Off focus.
47	Check for servo close is started.	Off focus.
48	Check of LOCK pin started.	Off focus or spindle not locked.
49	RF AGC started.	Off focus.
50	RF AGC in progress.	Off focus.
51	Standing by after RF AGC is over.	Off focus.

(5) Display Examples

1) During Setup (When status no. = 11)

TRK No.	MIN.	SEC.
11	11'	11"

2) During Operation (TOC read, TRK search, Play, FF and REV)

The same as in the normal mode.

3) When a Protection Error Occurred

Switch to the following displays (A) and (B) using the [BAND] switch:

(A) Error occurrence timing display in absolute time.

An example: Error occurred in 12th tune at 34'56" in absolute time.

TRK No.	MIN.	SEC.
12	34'	56"

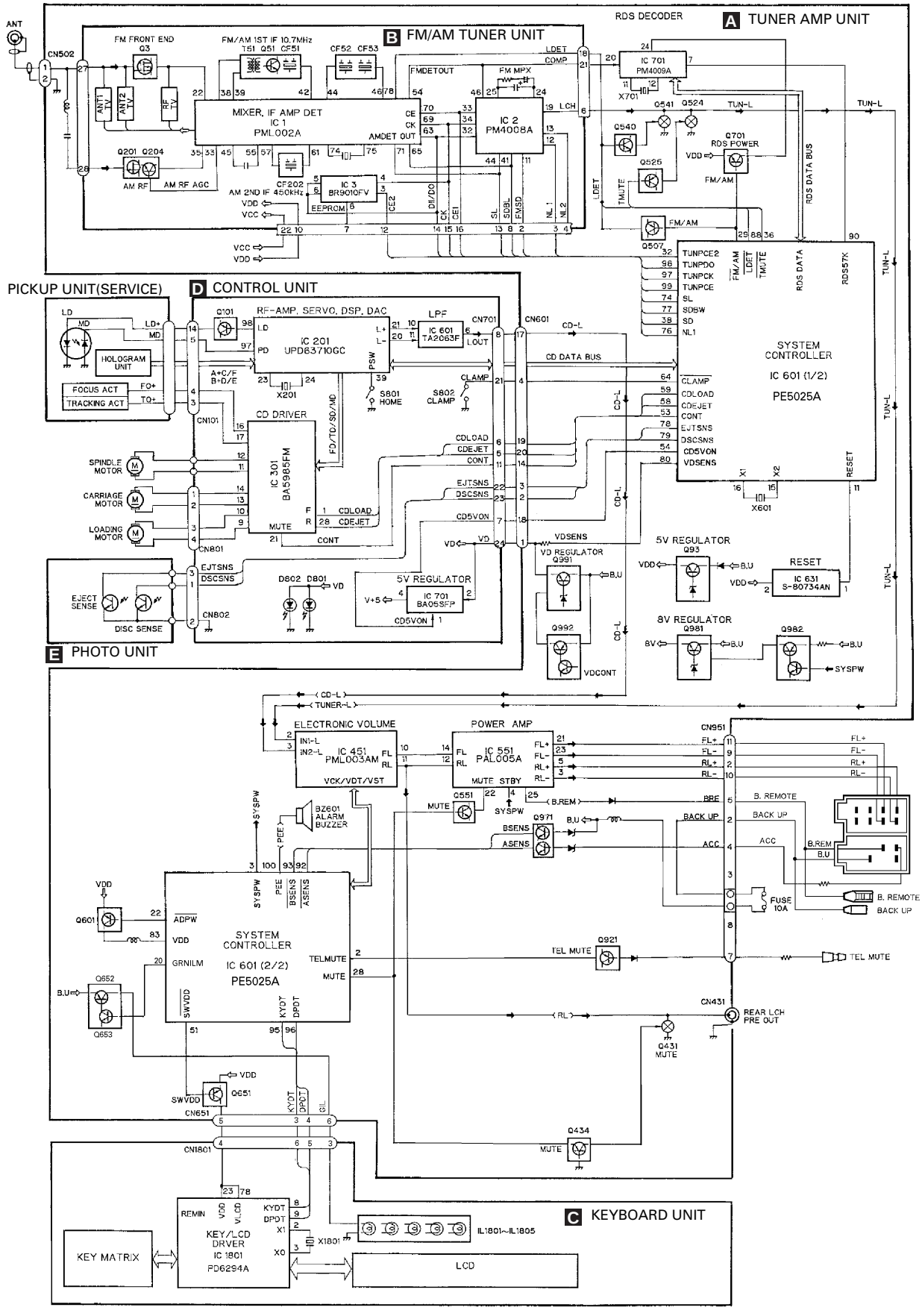
(B) Error No. display

An example: Error #40 (Off focus is detected)

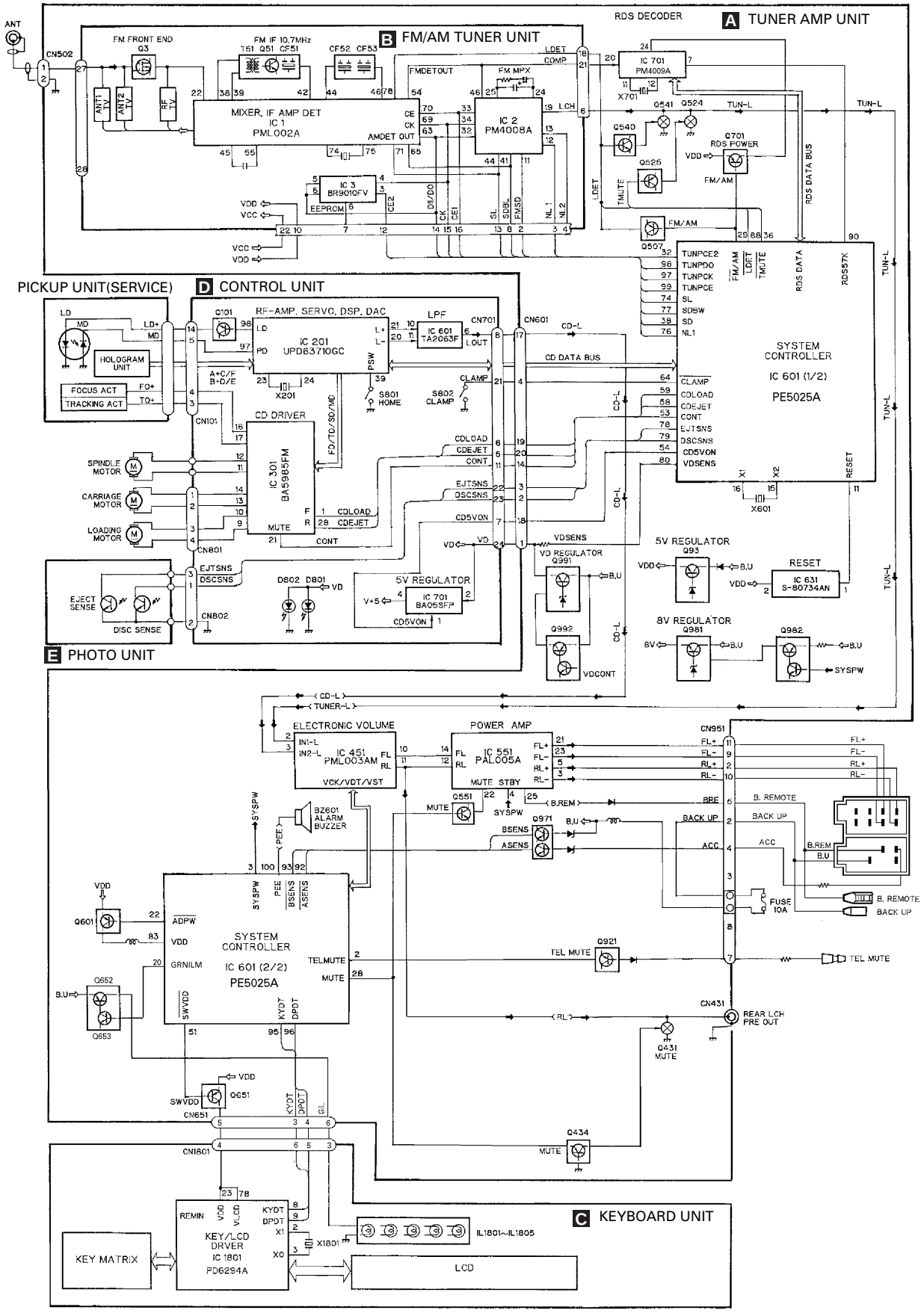
ERROR-40

7.3 BLOCK DIAGRAM

● DEH-2000R/X1N/EW, DEH-2030R/X1N/EW



● DEH-2020R/X1N/GR

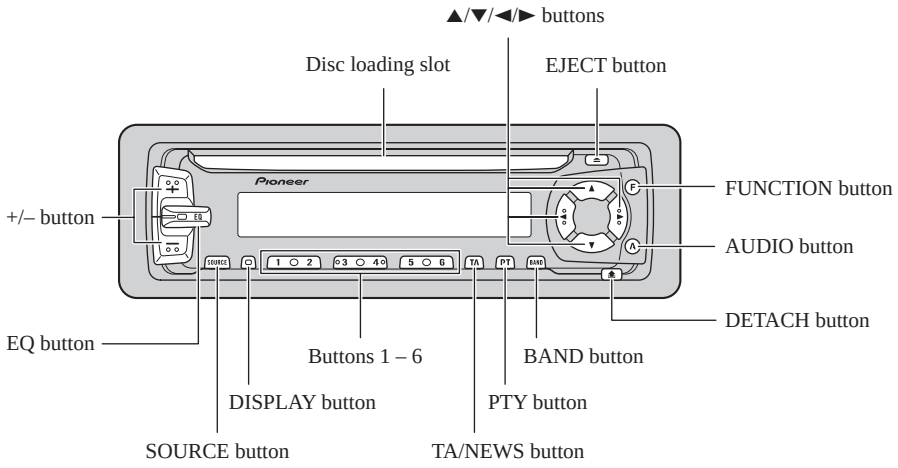


8. OPERATIONS AND SPECIFICATIONS

8.1 OPERATIONS

Key Finder

Head Unit



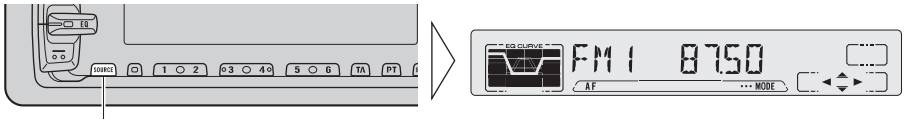
Basic Operation

To Listen to Music

The following explains the initial operations required before you can listen to music.

Note:
- Loading a disc in this product.

1. Select the desired source (e.g. tuner).



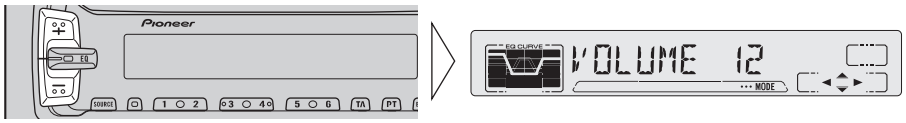
Each press changes the Source ...

■ Head Unit

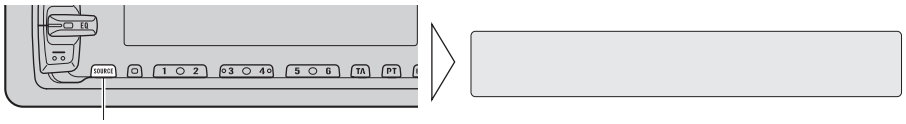
Each press of the SOURCE button selects the desired source in the following order:
Built-in CD player → Tuner

Note:
- The sound source will not change if no disc is set in this product.

2. Raise or lower the volume.



3. Source OFF.



Hold for 1 second or more

Basic Operation

Basic Operation of Tuner

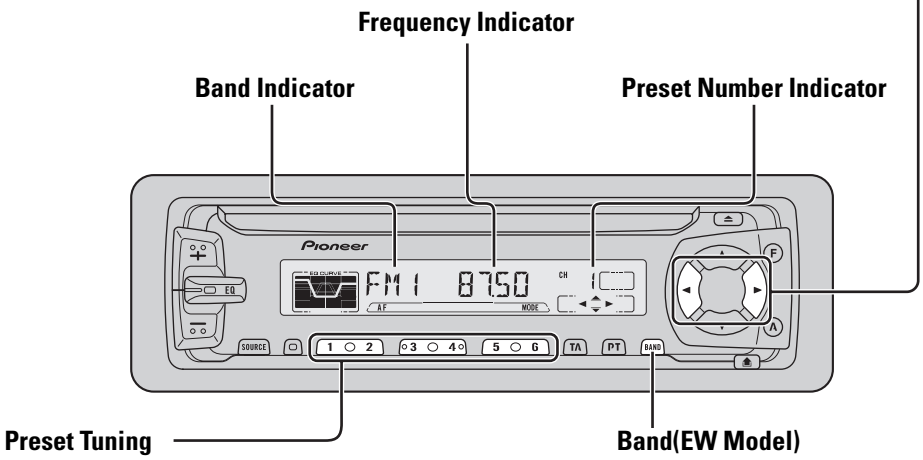
This product's AF function can be switched ON and OFF. AF should be switched OFF for normal tuning operations.

Manual and Seek Tuning

- **You can select the tuning method by changing the length of time you press the ◄/► button.**

Manual Tuning (step by step)	0.5 seconds or less
Seek Tuning	0.5 seconds or more

Note:
- If you continue pressing the button for longer than 0.5 seconds, you can skip broadcast stations. Seek Tuning starts as soon as you stop pressing the button.
- "◯◯" stereo indicator lights when a stereo station is selected.



- **You can memorize broadcast stations in buttons 1 through 6 for easy, one-touch station recall.**

Preset station recall	2 seconds or less
Broadcast station preset memory	2 seconds or more

Note:
- Up to 18 FM stations (6 in FM1, FM2 and FM3) and 6 MW/LW stations can be stored in memory.
- You can also use the ▲ or ▼ buttons to recall broadcast stations memorized in buttons 1 through 6.

Basic Operation of Built-in CD Player

Eject

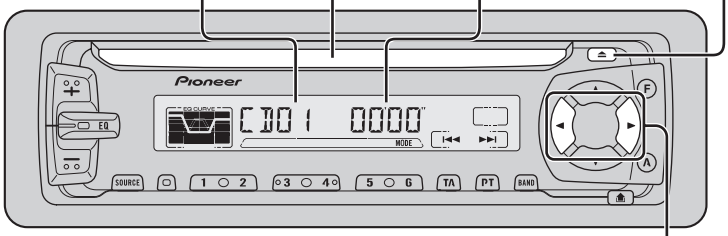
Note:
- The CD function can be turned ON/OFF with the disc remaining in this product.
- Discs left partially inserted after ejection may incur damage or fall out.

Disc Loading Slot

The built-in CD player plays one standard 12 cm or 8 cm (single) CD at a time. Do not use an adapter when playing 8 cm CD.

Track Number Indicator

Elapsed Play Time Indicator



Track Search and Fast Forward/Reverse

- **You can select between Track Search or Fast forward/Reverse by pressing the ◄/► button for a different length of time.**

Track Search	0.5 seconds or less
Fast forward/Reverse	Continue pressing

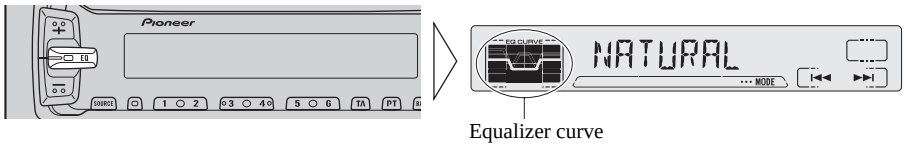
Note:
- If a disc cannot be inserted fully or playback fails, make sure the recorded side is down. Push the EJECT button and check the disc for damage before reinserting it.
- If a CD is inserted with the recorded side up, it will be ejected automatically after a few moments.
- If the built-in CD player cannot operate properly, an error message (such as “ERROR-14”) appears on the display.

Audio Adjustment

Selecting the Equalizer Curve

You can switch between Equalizer curves.

- **Move the EQ button up or down to select the desired Equalizer curve.**



Equalizer curve

POWERFUL ↔ NATURAL ↔ VOCAL ↔ CUSTOM ↔ EQ FLAT ↔ SUPER BASS

Note:
- "CUSTOM" stores an equalizer curve you have made adjustments to.
- You can create different "CUSTOM" curves for different sources.

Entering the Audio Menu

With this Menu, you can adjust the sound quality.

Note:
- After entering the Audio Menu, if you do not perform an operation within about 30 seconds, the Audio Menu is automatically canceled.

1. **Select the desired mode in the Audio Menu.**

Each press changes the Mode ...

2. **Operate a mode.**

3. **Cancel the Audio Menu.**

Audio Adjustment

Audio Menu Functions

The Audio Menu features the following functions.

Balance Adjustment (FADER)

This function allows you to select a Fader/Balance setting that provides ideal listening conditions in all occupied seats.

1. **Press the AUDIO button and select Fader/Balance mode (FADER) in the Audio Menu.**

2. **Adjust front/rear speaker balance with the ▲/▼ buttons.**
   "FADER F15" – "FADER R15" is displayed as it moves from front to rear.

3. **Adjust left/right speaker balance with the ◄/► buttons.**
   "BAL L 9" – "BAL R 9" is displayed as it moves from left to right.

Note:
- "FADER 0" is the proper setting when 2 speakers are in use.

Equalizer Curve Adjustment (EQ-LOW/MID/HIGH)

You can adjust equalizer curve settings as desired. Adjusted equalizer curve settings are memorized in "CUSTOM".

1. **Press the AUDIO button and select the Equalizer mode (EQ-LOW/MID/HIGH) in the Audio Menu.**

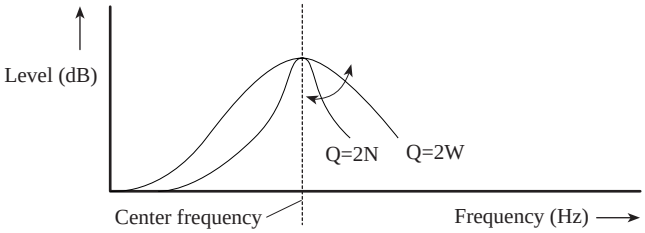
2. **Select the band you want to adjust with the ◄/► buttons.**
   EQ-LOW ↔ EQ-MID ↔ EQ-HIGH

3. **Boost or attenuate the selected band with the ▲/▼ buttons.**
   The display shows "+6" – "–6".

Note:
- If you make adjustments when a curve other than "CUSTOM" is selected, the adjusted curve is stored in memory as a "CUSTOM" curve. Also, the displayed curve switches to that selected before adjustments were made.

Equalizer Curve Fine Adjustment

You can adjust the center frequency of each equalizer curve band (LOW/MID/HIGH) and the Q factor (curve characteristics).



1. **Press the AUDIO button for 2 or more seconds to select Equalizer Curve Fine Adjustment.**

2. **Press the AUDIO button to select the desired band for adjustment.**

3. **Select the desired frequency with the ◄/► buttons.**

   LOW: 40 ↔ 80 ↔ 100 ↔ 160 (Hz)
   MID: 200 ↔ 500 ↔ 1K ↔ 2K (Hz)
   HIGH: 3K ↔ 8K ↔ 10K ↔ 12K (Hz)

4. **Select the desired Q factor with the ▲/▼ buttons.**

   2N ↔ 1N ↔ 1W ↔ 2W

Loudness Adjustment (LOUD)

The Loudness function compensates for deficiencies in the low and high sound ranges at low volume. You can select a desired Loudness level.

1. **Press the AUDIO button and select the Loudness mode (LOUD) in the Audio Menu.**

2. **Switch the Loudness function ON/OFF with the ▲/▼ buttons.**

3. **Select the desired level with the ◄/► buttons.**

   LOW ↔ MID ↔ HI

Audio Adjustment

Front Image Enhancer Function (FIE)

The F.I.E. (Front Image Enhancer) function is a simple method of enhancing front imaging by cutting mid- and high-range frequency output from the rear speakers, limiting their output to low-range frequencies. You can select the frequency you want to cut.

Precaution:
- When the F.I.E. function is deactivated, the rear speakers output sound of all frequencies, not just bass sounds. Reduce the volume before disengaging F.I.E. to prevent a sudden increase in volume.

1. Press the AUDIO button and select the F.I.E. mode (FIE) in the Audio Menu.

2. Switch the F.I.E. function ON/OFF with the ▲/▼ buttons.

3. Select the desired frequency with the ◄/► buttons.

100 ↔ 160 ↔ 250 (Hz)

Note:
- After switching the F.I.E. function ON, select the Fader/Balance mode in the Audio Menu, and adjust front and rear speaker volume levels until they are balanced.
- Switch the F.I.E. function OFF when using a 2-speaker system.

Source Level Adjustment (SLA)

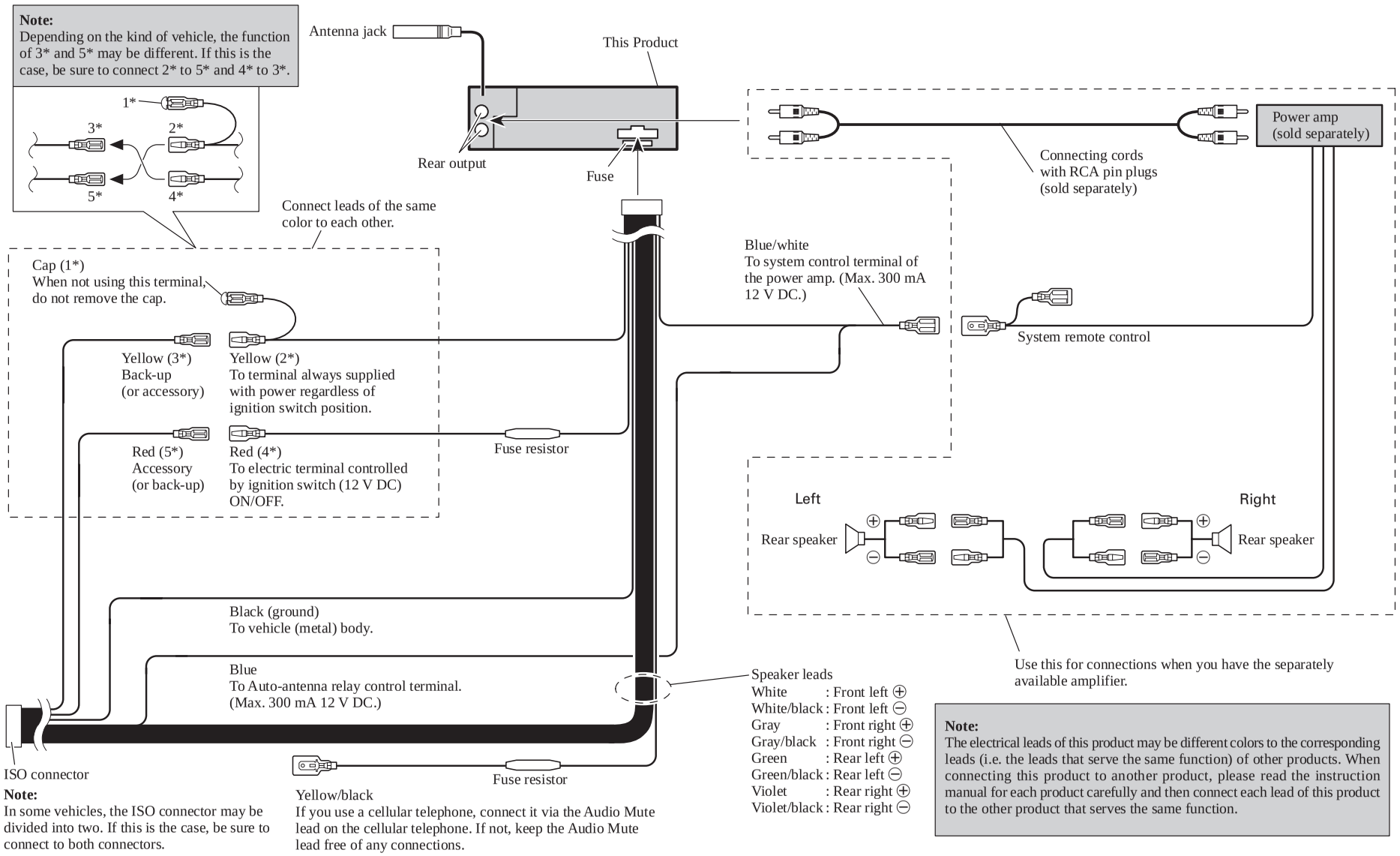
The SLA (Source Level Ajustment) function prevents radical leaps in volume when switching between sources. Settings are based on the FM volume, which remains unchanged. (Since the FM volume is the control, SLA is not possible in the FM modes.) The MW/LW and CD levels can all be adjusted.

1. Compare the FM volume with the volume of the other source. (e.g. Built-in CD player)

2. Press the AUDIO button, and select the SLA mode (SLA) in the Audio Menu.

3. Increase or decrease the level with the ▲/▼ buttons.

The display shows "+4" – "–4".


Note:
Depending on the kind of vehicle, the function of 3* and 5* may be different. If this is the case, be sure to connect 2* to 5* and 4* to 3*.
1*
2*
3*
4*
5*
Antenna jack
This Product
Rear output
Fuse
Power amp
(sold separately)
Connecting cords
with RCA pin plugs
(sold separately)
Connect leads of the same color to each other.
Cap (1*)
When not using this terminal, do not remove the cap.
Blue/white
To system control terminal of the power amp. (Max. 300 mA 12 V DC.)
System remote control
Yellow (3*)
Back-up
(or accessory)
Yellow (2*)
To terminal always supplied with power regardless of ignition switch position.
Red (5*)
Accessory
(or back-up)
Red (4*)
To electric terminal controlled by ignition switch (12 V DC) ON/OFF.
Fuse resistor
Left
Right
Rear speaker
Rear speaker
Black (ground)
To vehicle (metal) body.
Blue
To Auto-antenna relay control terminal.
(Max. 300 mA 12 V DC.)
Use this for connections when you have the separately available amplifier.
Speaker leads
White : Front left ⊕
White/black : Front left ⊖
Gray : Front right ⊕
Gray/black : Front right ⊖
Green : Rear left ⊕
Green/black : Rear left ⊖
Violet : Rear right ⊕
Violet/black : Rear right ⊖
Note:
The electrical leads of this product may be different colors to the corresponding leads (i.e. the leads that serve the same function) of other products. When connecting this product to another product, please read the instruction manual for each product carefully and then connect each lead of this product to the other product that serves the same function.
ISO connector
Note:
In some vehicles, the ISO connector may be divided into two. If this is the case, be sure to connect to both connectors.
Fuse resistor
Yellow/black
If you use a cellular telephone, connect it via the Audio Mute lead on the cellular telephone. If not, keep the Audio Mute lead free of any connections.

8.2 SPECIFICATIONS

● DEH-2000R/X1N/EW, DEH-2030R/X1N/EW

General

Power source ..... 14.4 V DC (10.8 – 15.1 V allowable)
Grounding system ..... Negative type
Max. current consumption ..... 10.0 A
Dimensions
(mounting size) ..... 178 (W) × 50 (H) × 159 (D) mm
(front face) ..... 188 (W) × 58 (H) × 22 (D) mm
Weight ..... 1.4 kg

Amplifier

Maximum power output ..... 45 W × 4
Continuous power output ..... 27 W × 4
(DIN45324, +B = 14.4 V)
Load impedance ..... 4 Ω (4 – 8 Ω allowable)
Preout maximum output level/
output impedance ..... 2.2 V/1 kΩ
Equalizer (3-Band Parametric Equalizer)
(Low) ..... Frequency: 40/80/100/160 Hz
Q Factor: 0.35/0.59/0.95/1.15
(+6 dB when boosted)
Level: ±12 dB
(Mid) ..... Frequency: 200/500/1k/2k Hz
Q Factor: 0.35/0.59/0.95/1.15
(+6 dB when boosted)
Level: ±12 dB
(High) ..... Frequency: 3.15k/8k/10k/12.5k Hz
Q Factor: 0.35/0.59/0.95/1.15
(+6 dB when boosted)
Level: ±12 dB
Loudness contour
(Low) ..... +3.5 dB (100 Hz), +3 dB (10 kHz)
(Mid) ..... +10 dB (100 Hz), +6.5 dB (10 kHz)
(High) ..... +11 dB (100 Hz), +11 dB (10 kHz)
(volume: –30 dB)

CD player

System ..... Compact disc audio system
Usable discs ..... Compact disc
Signal format ..... Sampling frequency: 44.1 kHz
Number of quantization bits: 16; linear
Frequency characteristics ..... 5 – 20,000 Hz (±1 dB)
Signal-to-noise ratio ..... 94 dB (1 kHz) (IEC-A network)
Dynamic range ..... 92 dB (1 kHz)
Number of channels ..... 2 (stereo)

FM tuner

Frequency range ..... 87.5 – 108 MHz
Usable sensitivity
..... 11 dBf (1.0 µV/75 Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity .... 16 dBf (1.7 µV/75 Ω, mono)
Signal-to-noise ratio ..... 70 dB (IEC-A network)
Distortion ..... 0.3% (at 65 dBf, 1 kHz, stereo)
Frequency response ..... 30 – 15,000 Hz (±3 dB)
Stereo separation ..... 40 dB (at 65 dBf, 1 kHz)

MW tuner

Frequency range ..... 531 – 1,602 kHz
Usable sensitivity ..... 18 µV (S/N: 20 dB)
Selectivity ..... 50 dB (±9 kHz)

LW tuner

Frequency range ..... 153 – 281 kHz
Usable sensitivity ..... 30 µV (S/N: 20 dB)
Selectivity ..... 50 dB (±9 kHz)

Note:

- Specifications and the design are subject to possible modification without notice due to improvements.

● DEH-2020R/X1N/GR

General

Power source ..... 14.4 V DC (10.8 – 15.1 V allowable)
Grounding system ..... Negative type
Max. current consumption ..... 10.0 A
Dimensions
(mounting size) ..... 178 (W) × 50 (H) × 159 (D) mm
(front face) ..... 188 (W) × 58 (H) × 22 (D) mm
Weight ..... 1.4 kg

Amplifier

Maximum power output ..... 45 W × 4
Continuous power output ..... 27 W × 4
(DIN45324, +B = 14.4 V)
Load impedance ..... 4 Ω (4 – 8 Ω allowable)
Preout maximum output level/
output impedance ..... 2.2 V/1 kΩ
Equalizer (3-Band Parametric Equalizer)
(Low) ..... Frequency: 40/80/100/160 Hz
Q Factor: 0.35/0.59/0.95/1.15
(+6 dB when boosted)
Level: ±12 dB
(Mid) ..... Frequency: 200/500/1k/2k Hz
Q Factor: 0.35/0.59/0.95/1.15
(+6 dB when boosted)
Level: ±12 dB
(High) ..... Frequency: 3.15k/8k/10k/12.5k Hz
Q Factor: 0.35/0.59/0.95/1.15
(+6 dB when boosted)
Level: ±12 dB
Loudness contour
(Low) ..... +3.5 dB (100 Hz), +3 dB (10 kHz)
(Mid) ..... +10 dB (100 Hz), +6.5 dB (10 kHz)
(High) ..... +11 dB (100 Hz), +11 dB (10 kHz)
(volume: –30 dB)

CD player

System ..... Compact disc audio system
Usable discs ..... Compact disc
Signal format ..... Sampling frequency: 44.1 kHz
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Note:

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